App. F. IX-4

Previous References

193
(Legis)

File No. 32-31

Serial Nos.

Enclosures to Leges A file

Later References

No. 32-31-1-4

General and Revenue Secretariat.

Serial Nos.

Part B for

SUBJECT.

Misc. papers of reference connected with the Mysore Irrigation Regulation 1932 (Regulation no I of 1932)

N o t e.

The bill contains the following chapters.

CHAPTER I. Definitions, etc.

II. Control of water of Irrigation Works.

III. Water courses.

IV. Application for water supply.
Rights of Irrigation

V. Award of compensation.

VI. Water rates
Supply rates
Occasional rates
Percolation rate.

VII. Compulsory labour.

VIII. Penalties.

Second Class Irrigation Works.

Record of Rights.

General Provisions.

The question of the levy of contribution has not been provided for in the regulation. There is also no provision for making efficient arrangements for the distribution of water by local agency The Tank Panchayet Regulation perhaps makes this unnecessary.

The proposal to publish the bill in the Gazette may be approved in Council.

Mr R

General No. 2873. / P. W. D. 19. } 1863—64.

MYSORE COMMISSIONER'S OFFICE,

CIRCULAR.

To

The Superintendent { NUNDIDROOG / ASHTAGRAM / NUGGUR } DIVISION.

SIR,

Copy of No. 1024 d. 20th. August 1863, from Officiating Chief Enginer in Mysore, with annexure.

I am desired by the Commissioner, to forward for your information the enclosures marginally noted, and with reference to para 8 of the letter from Colonel Carpendale, to observe that the Commissioner quite concurs as to the liability of Raiyats to make such pressing repairs to minor works, as can be effected at the time to prevent further damage.

Canarese copies of the rules on the subject will be forwarded for distribution to the Taluks.

BANGALORE,

5th November, 1863.

I have the honor to be

Sir,

Your most obedient Servant,

A. C. HAY,

Secretary.

No. 1024.

MYSORE PUBLIC WORKS DEPARTMENT,

CENTRAL OFFICE.

From

LIEUT.-COLONEL J. CARPENDALE, R. E.
Offg. Chief Engineer in Mysore.

To

The Secretary to the Commissioner for the Government of the Territories of His Highness the Rajah of Mysore.
Dated the 20th August 1863.

SIR,

I have the honor to acknowledge your No. $\frac{1337}{93}$ of 25th July last requesting me to define particularly what Agricultural works, not being new works, should be considered "Restorations" as distinguished from "Repairs." Any definition of this kind must to a great extent be arbitrary, but the safest plan will be to take the rules* of the Code on this subject as relates to buildings for a guide. Accordingly, all repairs which are rendered necessary by ordinary decay, or wear and tear, and which do not in any way improve the Irrigation work, or lead to an increase of revenue, should be classed as "Current Repairs" provided the amount is not more than one-fourth of the value of the Tank, Channel, or whatever the work may be.

Chapter VIII
Section I.
Page 77.

2. All repairs which are rendered requisite by storms and floods, and which are of such a nature as just to restore the work to what had been its condition before the storm or flood, should be classed as "Special Repairs."

3. If the cost of repairs exceeds one-fourth of the value of the work, the work should be called a Restoration, although no increase of revenue may be expected, that is, if the revenue under a tank for instance is Rupees 800 per annum, which at 5 *per cent* interest represents a capital of Rupees 16,000, and which we must call the *value* of the tank, then if the "repair" either current or ordinary, is estimated to cost more than Rupees 4,000 the work should be called a Restoration, and be classed as a new work.

4. If an Irrigation work is ruined by a storm or flood—for instance a tank breached—and so allowed to remain whereby more than four years' revenue is lost, the repair made to put it in its former condition should be called a Restoration, and be classed as a new work.

5. It is often the case that additions and alterations are made to Irrigation works, which cannot be said to be in want of repairs, and whereby an increase of revenue may be expected. This also should be classed as a new work.

6. Other cases there are, and they are by far the most common, in which advantage is taken while making requisite repairs either Current or Special, to effect an improvement at the same time, cases which it is difficult to classify. Perhaps the best general rule to lay down, would be that the work should be called a new work or a repair, according to the head under which the expenditure preponderates; to be called a new work if the cost of the improvements exceeds the estimated cost of repair, either Current or Special, and *vice versa*, or if the estimate for repairs only exceeds one fourth of the cost of the work, the whole expenditure will be charged as new work. While the above definitions will I think meet all usual cases, special ones will occasionally arise which it may be desirable to rule upon at the time, such for instance as restoring a breached village tank, in consideration of the convenience that it would be to the community, and where no increase of revenue can be expected, but possibly a decrease, as for instance, where the revenue to be derived from cultivation *under* a tank, is less

than the existing revenue from cultivation in the bed of the tank, or where indeed the bed being submerged, and the cultivation stopped without any cultivation *under* the tank ensuing: usually work of this kind would be called a Restoration or a new work. It certainly cannot be called a "Repair Agricultural" nor is it right in my opinion that it should be called an Irrigation work at all, if there is no cultivation under it. It should in such case be considered a Municipal work, and paid for out of the Reserve, or be specially provided for in the Budget. If the anticipated revenue under the tank, is not less than the existing revenue, it might be considered an agricultural work, and classed as a Restoration.

7. One class of works remain to be considered, and which although really new, should be debited to repairs, because, the object is to prevent a larger expenditure hereafter in making extensive repairs; these are the construction of waste weirs, where none, or a sufficient number or of sufficient capacity, do not exist, additional sluices are the improvement of existing ones, it would also be advantageous to class in like manner.

8. While on this subject, I would beg to bring under the Commissioner's consideration, the expediency of reverting to the custom that formerly prevailed of requiring the Raiyats to make from time to time, such trifling repairs as if taken in time would reduce the expenditure under the head of Current repairs to a minimum, and leave a larger amount available for extensive improvements and restorations: I allude to the damage done by the Raiyats in making new cuts, or enlarging old ones for the passage of water. The removal of a large stone here and there by the washermen: the repair of damage done to the bunds and banks by the village cattle and such like: It is not easy to fix a money limit to work of this description, the more so, as it is probable that different customs prevailed in different Districts; but whatever they were, I would recommend their being reverted to. The existing institution of *Kerabundies* shows that this was the immemorial practice in Mysore. This subject engaged the attention of the Madras Government three years ago, and I append for the Commissioner's information, the rules which it laid down.

I have the honor to be

Sir,

Your most obedient Servant,

J. CARPENDALE, Lt.-Col. R. E.

Officiating Chief Engineer in Mysore.

Bangalore,
20*th August* 1863.

RULES REGARDING THE CONSERVANCY DUTIES TO BE PERFORMED BY VILLAGERS TO IRRIGATION WORKS ACCORDING TO LOCAL CUSTOM.

I.

Duty of village authorities to enforce performance of minor works of conservancy according to local custom.

It shall be the duty of the village authorities throughout the Province, to enforce the performance of those minor works of conservancy and repair, which are sanctioned by local custom in each District as ascertained and defined by the Superintendent, and District Engineers shall, invariably, when submitting bills for slight repairs or damages to irrigation works, report by memoranda attached to such bills, the circumstances under which such repairs were not executed at the cost of the Raiyats.

The following are some of the most usual of those works :—

1. To fill up gullies or other inequalities caused by rain, the treading of cattle, &c., upon the bunds of tanks and channels.
2. To check the growth on bunds of the prickly pear, and any similar rank and pernicious weed.
3. To clear away such underwood from the bunds of tanks, as may be considered by the District Engineer to be injurious.
4. To clear out the deposits from tank sluices, and from river and spring channels to such an extent as will afford a sufficient opening for the supply of water to flow to the Raiyats' fields.
5. To clear and repair the earth work of petty and branch channels and clear away the accumulations in all channels issuing from tanks, which obstruct the flow of water to the fields.
6. To keep in order the supplying channels of tanks, to such extent as is sanctioned by local custom.
7. To watch the bunds of all tanks during rainy weather; to turf the parts acted on by the waves, which appear leaky; to open and close the calingulahs; and generally to perform minor duties of this nature to prevent breaches and other accidents.
8. To construct ring dams at breaches, and where requisite to temporarily strengthen the bunds of tanks during the season of cultivation. And, in general, by that constant care and attention which residents on the spot can alone exercise, to preserve the works of irrigation, in which they and the Government have a common interest, from those small injuries which, if unchecked, will lead to serious loss and expense.

II.

Village authorities to prevent any proceedings which may tend to endanger an irrigation work.

It shall be the duty of all village authorities, to hinder the Raiyats of their respective villages, from doing anything which may tend to endanger an irrigation work; such for instance, as throwing up a bund in front of the calingulah, to keep the water at a high level, making temporary cuts in the bunds of tanks, or introducing pot sluices into them. The village authorities will be held responsible for any damages occasioned by their neglect of this rule.

III.

Village authorities to see that members of the Department of Public Works are supplied with all ordinary articles of consumption.

It shall be the duty of the village authorities, to see that the ordinary articles of consumption are supplied to members of the Public Works Department, without delay, at fair market prices.

MYSORE COMMISSIONER'S OFFICE,

BANGALORE,

24th November 1863.

(BY ORDER,)

A. C. HAY,

Secretary.

Rules for the Conservancy of the River Channels in the Ashtagram Division of Mysore.

The conservancy of the river channels as well as all works of irrigation is vested in the Superintendent of Channels under the orders of the Deputy Superintendent.

2. The term conservancy includes the protection of the channels from injury by design, neglect, or accident, the execution of all repairs, and clearance and the maintenance of a due supply of water according to the requirements of the cultivation, but does not extend to any work of improvement, which should not be carried out without reference to the Executive Engineer.

3. The Amildar will report to the Deputy Superintendent all irregularities, inattention, and neglect of duty on the part of the channel servants, and all injuries, &c., to the channels, or works attached, but will not interfere directly with the channel servants, and it will be the duty of subordinate Taluk servants to report immediately to the Amildar any occurrence affecting the welfare of the channels.

4. The Deputy Superintendent will refer such reports to the Superintendent of Channels for information, disposal, or report, according to their nature.

5. The conservancy establishment consists of one Superintendent, three Darogas, 7 Overseers, 28 Manegars and 231 Sowdis. The establishment is directly under the orders of the Superintendent of Channels, through whom the Deputy Superintendent will transmit all instructions relating to conservancy.

6. The Darogas should possess the practical knowledge required of an Assistant Overseer in the Public Works, Department and should not be appointed without obtaining a certificate to that effect from the Executive Engineer.

7. The duties of the Darogas will consist in constant inspection of the channels and anikats, &c., and in preparing estimates for ordinary repairs, also in superintending the execution of works and measuring and reporting on the same when completed; but they will not act as disbursing agents, and all payments will be made by the Amildar on the orders of the Treasury officer as forwarded by the Superintendent of Channels.

8. The Darogas will keep journals in English of their proceedings, noting briefly, but clearly, the duties they perform and the observations they make on the state of the works. The Journals should be sent every ten days tothe Superintendent of Channels with sufficient margin for him to make such remarks as he may deem necessary. The Superintendent of Channels will then forward the documents to the Deputy Superintendent for his perusal and for such further remarks and orders as may appear called for, and the Deputy Superintendent will finally return them with the least possible delay to the Superintendent of Channels. In all cases of emergency or where immediate attention is required, the Superintendent will not wait for orders.

9. All estimates will be forwarded by the Superintendent of Channels after examination to the Deputy Superintendent, who will dispose of them according to the rules in force for petty works.

10. The Darogas will report at once all instances, coming to their notice of channel offences as set forth below.

11. The qualifications of a Channel Overseer should be about the same as those of a Sub Overseer in the Public Works, Department and he should have a certificate from the Executive Engineer.

12. The duties of the Channel Overseers will be exactly the same within their ranges as those of the Darogas.

13. The Manegars should possess the qualifications of a Shanbhog, and will keep the accounts of all works executed by the Revenue authorities. They are also required to make themselves acquainted with the state of the channel within their ranges and bring to notice any deficiencies or irregularities.

14. The Sowdis are the distributors of water and watchmen of the channels and occupy the same place as the Nirguntis of tanks, but as they are more highly paid, they will be required to perform more work. They will constantly inspect the channel and under the order of the Overseers regulate the discharge of water through the sluices, preventing or reporting all irregular means which the raiyat may resort to, for watering their landes.

15. In cases of emergency, the Sowdis will give immediate information to the nearest village authorities as well as to the conservancy officers, who will adopt the necessary measuresfor preventing or repairing injuries.

16. Sowdis should be provided with a momoty and bill book and should hut themselves as near as possible to their beat on the channel. They should be employed in making petty repairs, planting trees, levelling the channel bank, and in any other manner consistent with their proper duties, but are on no account to be withdrawn from the channel or employed as peons, &c.

17. The repairs to be provided for by the conservancy establishment and executed by the Civil officers are current and emergent.

18. Current repairs consist of those which are usually executed in the dry season, when the channels can be inspected and estimates framed, and should never be executed without the previous sanction of the Deputy Superintendent.

These estimates should be sent in by the Superintendent of Channels by the end of November.

19. Emergent repairs are such as may be executed at any time and may be commenced without sanction, but of which an immediate report should be made by the Superintendent of Channels.

Requisitions by the Superintendent of Channels on the Taluk Treasuries within the limits of which emergent repairs are required, to the extent of Rs. 100, must be immediately attended to.

20. Repairs to all works connected with the channel, including anikats and sluices, will be executed under the rules for the execution of Public Works by Civil officers, but no alteration shall be made in the course of any channel, and no new sluices or waste weirs shall be constructed, nor the position of any existing sluices or waste weirs be altered except after reference to the Executive Engineer, to be specially reported.

21. Mile stones will be fixed along the bank of each main channel and the annual estimates will show the current repairs to be executed in each mile of distance from the head as well as in what village limits, they are situated.

22. The following are the duties of the raiyats in connection with the channel conservancy.

I. To keep in order, without payment, the branch channels.

II. To render prompt assistance in cases of emergency or danger to the main channels or works connected therewith.

23. The following acts constitute offences punishable by the Magistrate or Amildar, and Deputy Superintendent in their Revenue capacity.

I. Obstructing the flow of water in the main or supply channels.

II. Injuring the main channels by opening escapes for the water or otherwise.

III. Injuring the channel banks by digging up grass or otherwise.

IV. Wilfully allowing cattle to stray on the banks of the channels.

V. Cultivating land within a space of five yards from the channel banks, after being prohibited by proper authority from doing so.

VI. Interfering with any sluice or other work in the main channels.

VII. Widening, deepening, or otherwise altering the supply channel to the detriment of land further from the sluice.

VIII. Wilfully allowing wastage of water flowing from the main channel.

These may either be punished by fine in the Revenue Courts, or offenders may be prosecuted under Sections 425, 426, 427, 430, 431, 432 of the Indian Penal Code.

24. The Superintendent of Channels is empowered to fine channel servants for inattention to orders, neglect of duty, &c., to the extent of Rs. 10, but in no one instance, exceeding one quarter of the monthly salary of any servant. Darogas of circles are empowered to fine channel servants within their circles for similar offences to the extent of Rs. 5, but in no one instance exceeding one-quarter of their monthly salary.

Monthly statements of fines to be furnished by Darogas to the Superintendent of Channels, and by him to the Deputy Superintendent.

All complaints against Village or Taluk officials to be reported by the Superintendent of Channels to the Deputy Superintendent.'

25. Amildars are empowered to deal promptly with channel offences as enumerated in para 23 on the Revenue side by fine not exceeding Rs. 10, the more serious cases being punished under the Penal Code as above laid down. Monthly statements of such cases as are disposed of on the Revenue side to be furnished to the Deputy Superintendent.

(Signed) C. ELLIOT,

Acting Superintendent,
Ashtagram Division.

Mysore Govt. Central Press, Bangalore.—1-4-94.—50.

Additional Rules for the conservancy of the River Channels in the Ashtagram Division.

1. The Superintendent of Channels will be required to keep a Journal of his proceedings, which will ordinarily be submitted monthly for the information of the Deputy Superintendents, but in emergent cases requiring prompt attention, he will submit special reports after each inspection of any channel for the orders of the Deputy Superintendents, who, subject to the general control of the Superintendent of the Ashtagram Division, will be considered the responsible executive agents for the repair, clearance and maintenance of the channels lying within their respective Districts.

2. These Journals or reports will be passed on to the Executive Engineers for such professional remarks as may be considered desirable, and will be returned at once to the Deputy Superintendents, who will themselves issue the requisite instructions to the Superintendent of Channels.

3. The Darogas in charge of Circles will, as at present, be required to keep Journals of their proceedings for submission to the Superintendent of Channels, who will embody the facts therein brought to notice, as far as may be requisite in his own Journals, to be submitted to the Deputy Superintendents.

4. The Executive Engineers will be considered to have professional charge of the channels, and will look upon their inspections as one of their first and most important duties, furnishing a copy of their inspection reports to the Deputy Superintendent (the original will be sent to the Chief Engineer) who will take such action thereon as the circumstances of the case may seem to require.

5. The Executive Engineers when making their inspections will issue no direct instructions to the Conservancy Establishment in respect to their *ordinary* duties, but it will be expected that the opinions offerred by them in regard to emergent and important works requiring professional skill and superintendence, will be acted upon by the officers of that Department, and further that their views will be freely consulted with reference to projects other than the ordinary works of the Conservancy Department.

6. It will be very desirable at times that the Superintendent of the establishment should take up special works in connection with these channels, *i. e.* works of an original character involving new construction or radical reconstruction. In the execution of sanctioned works of this nature, it will ordinarily be requisite to place the Superintendent of Channels under the direct orders of the Executive Engineers.

7. The Superintendent of Channels will have power to sanction repairs to the extent of Rs. 50 for each work. A list of such sanctions should be furnished monthly to the Deputy Superintendent, for the purpose of being embodied in that Officer's return of minor sanctions submitted to the Chief Engineer.

8. In all cases of emergency such as a sudden breach, &c., when delay by a reference to higher authority would be attended with loss of revenue, the Superintendent of Channels will be empowered to carry out the necessary work at once, submitting an immediate report of his proceedings to the Deputy Superintendent, and, as soon as possible afterwards, an estimate of the work for sanction.

By Order,
T. G. CLARKE,
Offg. Secretary.

BANGALORE,
26th April 1867.

No. $\frac{661}{63.}$

From

MAJOR R. H. SANKEY, R. E.,

Chief Engineer of Mysore.

To

The Secretary to the Commissioner,

for the Government of the Territories of His Highness

the Maharaja of Mysore.

Dated the 4th February 1868.

SIR,

In compliance with the Commissioner's request, conveyed in your letter No. 5510—596 of the 3rd ultimo, that I should report on the changes which I consider necessary in the constitution of this Department to allow of its being eventually controlled through native agency, I do myself the honor to submit the following remarks for Mr. Bowring's consideration.

2. As it would be out of place to consider the nature of the machinery before determining the work to be done, in all its bearings, I shall take that point first. Irrigation works, generally, it may be safely said, occupy the very first position in point of importance, and of the two classes into which the subject naturally divides itself, *viz.*, tanks and channels, the former appears to me to be of the greatest moment, as regards the well-being and prosperity of the mass of the people. I shall therefore commence by considering the work to be done, with reference to the Tank System, and the best way of doing it.

This office No. 3828—507 of the 19th November 1866 and No. 1632—159 of the 28th March 1867.

3. In the communications marginally noted, but to which I have not as yet been favored with replies, I have endeavoured to explain what I believe to be the true bearings of the case; and if the positions therein laid down be accepted, the question as to what work is to be accomplished is easily answered.

4. The three fundamental points, which I have endeavoured to establish, are :—

First, that the natural forces which influence the Tank System in Mysore, are of such a singularly stable character, as to allow of their being perfectly controlled by suitable arrangements.

Second, that the Tanks being groups of mutually dependent works, the plan hitherto followed, of dealing with them individually, has been radically defective.

Third, that occasional extraordinary repair or reconstruction of individual works, has been the rule up to the present time; whereas the only true method is to be found in instituting such arrangements as will absolutely insure the ordinary maintenance and up-keep of every work from day to day.

At the risk of being considered tedious, I must now consider these points in detail.

5. With regard to the first, and chiefly the rain-fall, on which the existence of the Tank System mainly depends, I have already in paras 16—25 of my Irrigation Report No. 3828—507 of the 19th November 1866, explained fully the existing conditions with which we have to deal. It will suffice therefore, briefly to observe that from all concurrent evidence, historic and geologic, it is clear that the Western Ghats have exercised such a singular influence as to confine the variations of both the annual and diurnal rain-fall, within even smaller compass than that of the climate of England. It necessarily follows, that this force can be placed perfectly

under control, or in other words, that by means of proper arrangements, no Tanks should ever burst in the country. On the second point—namely, the mutual dependence, one on the other, of all Tanks within the same catchment basin,—I have also before adverted to this in para 53 of the above quoted report, and should hardly feel myself called on to dwell for an instant, on such an obvious and widely acknowledged condition, were it not that, however clear to every one, the practice of the last 35 years, and also that of the previous native Governments, show indisputably, that it has never influenced the mode of dealing with individual works.

6. I do not mean by this statement, that the condition of upper tanks has not been in some measure taken into consideration, as this has been done by this Department, with a view to make ample provision for the escape of surplus water in individual cases—what I wish to be understood, is, that the fact of a Tank being found breached has not systematically led, as it should have, to an examination of all the smaller tanks above on the stream, with a view to their being *first* put in order, thereby and thereby only, insuring absolutely, the safety of the one which originally attracted attention.

7. In the paragraph above alluded to, in my Irrigation report, I have shown that population originally fixing itself along the higher grounds and sources of the several streams, constructed numerous small Tanks, and afterwards, by natural expansion, creeping down into the lower valleys, established a secondary series of tanks;—thus by successive movements, building larger and larger reservoirs, until at length their power to control the waters of the several streams failed them. The limits once reached, the whole tank system settled down into the condition in which we now find it, but as I have before pointed out, the communities dependent on the larger tanks in the several series being of necessity the most influential and powerful, have invariably as a natural consequence, been enabled to get their wants attended to first, to the detriment of the others. The upper Tanks of the several series have thus, as a rule, been in disrepair probably for ages. This state of things, which is directly traceable to circumstances, having led to the claims of the different reservoirs being taken up in exactly the reverse order to that which was required by a scientific treatment of the system, has introduced elements of uncertainty that expose individual Tanks to undue risks.

8. While therefore the natural forces are as constant in their action as they ever were before, the want of systematic treatment, as above described, has neutralized to a very great extent the favorable conditions under which the Tank system grew into existence. Unless the principle of mutual dependence be therefore recognized and acted on, I cannot myself see that we have made many steps in advance of the native Governments that have preceded us.

9. Individual works have of course been treated in a more scientific manner, but this it appears to me is a small set off against the entire ignoring of a vital principle of action; and to have blindly followed the practice of previous native Governments during the last 35 years, in a matter plainly referable to common scientific truth is, to say the least, humiliating and unworthy of our civilization.

10. The third point to which I have referred, namely, that extraordinary repairs of individual works have taken the place of the ordinary maintenance of every Tank in the country is, I need hardly say, after the above remarks, an obvious consequence of a misplaced principle of action. I have considered this subject in my letter to the Commissioner No. 1632---159 of the 28th March 1867, and therein shown that while the ordinary maintenance of the Tanks in this Province has never once been attempted to be grappled with, it is the only means by which the large outlay yearly incurred in extraordinary repairs and reconstructions can by any possible means be put an end to. That this is a point worthy of consideration, may be concluded from the fact shown in para 45 of my Irrigation Report, that between 1837 and 1858, no less than 30 Lakhs of Rupees were spent on these extraordinary repairs, and that we are now laying out Rs. 2,50,000 yearly, in perpetuating to a very great extent the same vicious system. I must therefore be pardoned for dwelling a little longer on this cardinal point.

11. As I have above said, in consequence of our not recognizing the principle of the mutual dependence of tanks, elements of uncertainty and danger have been

produced, which by giving rise to breached bunds, have necessitated the adoption of a hand-to-mouth mode of procedure. We take up such breaches of bunds or extreme cases of disrepair as the available funds admit, meanwhile however, utterly ignoring the fact that from day to day, forces are in action which cause the deterioration of every bund in the country and prepare an ever fresh and endless crop of troubles. We are in fact engaged most busily in performing the task of Sisyphus not, as it appears to me, very much to our credit.

12. It is in itself sufficiently regrettable to have to deal with works constantly deteriorating [the beds of Tanks rising, the height of their bunds lowering] by the action of ordinary natural forces; but at least we know that the action itself is in a great measure, beyond our control and therefore unavoidable. The same, however, cannot be said from the much more serious deterioration of all bunds in the Province arising from the laziness or vice of the people—from the commission of acts, which it certainly ought to be in the power of Government to control. I have shown plainly before, how nearly every tank bund in the Province is now being subjected to the utmost ill usage from the cultivators, whose very lives it may be broadly said are dependent on the maintenance of these works. Whatever effect self-interest may have on the individual, it has, as far as my observation reaches, no effect whatever on communities of Mysore cultivators. In every part of the country the same utter recklessness, regarding the Tank bunds, seems to exist, and this along side of the most patient drudgery of individual cultivators, in preparing their fields for the rice crop, dependent on the stability of the work.

13. Hitherto, then, no general principle of action has been recognized, in dealing with the Provincial Tank System, while at the same time we clearly admit that the whole life of the people is bound up in these works of irrigation. It is a sad enough spectacle to look around and see the thousands on thousands of ruined tanks, but it is still sadder to reflect, that drought and famine are periodical visitants, claiming endless victims and that we have ourselves almost entirely to blame for this. Fully aware of the extreme presumption of these observations, I cannot at the same time reconcile it to my sense of duty, to withhold what I have to say on a subject of such vital importance on an occasion like the present when such radical changes are contemplated in the administration of the Province.

14. I shall now endeavour to trace a scheme, or at least the outlines of one, which I trust may, while rescuing our good name from reproach, fall in with the coming changes.

15. I would propose in the first place that, accepting the principles laid down in para 4, an Irrigation Department be formed to give effect to them. This new Department, quite small at first, might select the Tanks in one, or at most two drainages, and work altogether tentatively, gradually and cautiously extending their sphere of action and increasing in strength of Establishment, as circumstances admit. I would deprecate any violent changes, or any change indeed at first from present practice, till the Superintendent of Irrigation be enabled clearly to see his way. He would simply feel his way, as it were, relieving both this and the Civil Officers, (though working entirely in harmony with both, and using their agency, where desirable) of their duties in regard to the tanks, as his ability and the strength of his Establishment would admit.

16. It would of course be premature, as indeed it would be otherwise undesirable, to lay down any precise rules for guidance of an officer charged with such novel and important duties; but at the same time, I may be permitted to state briefly one or two points that occur to me as worthy of consideration.

17. Very stringent obligations are now being introduced with the Revenue Survey, as regards the inviolability and preservation of boundary marks; and as these rules and obligations have been introduced under penalties simply in view to the public good, I cannot but think that the principle should unquestionably be extended.

18. Lest there should be any doubt as to the propriety of introducing stringent measures in regard to the preservation of the works, I would beg to draw attention to the system which has been followed in the Spanish Irrigation Works from the time of the Moors, as given in the following extract from Mr. Markham's Report on the garden of Valencia.

" The eight judges, forming the Tribunal *de las aguas*, assemble once a week, " Thursdays at noon under the door of the Cathedral at Valencia, where they sit in " a row, on a bench in the open air. Here a succession of rural judges, elected " annually by their fellow-laborers, has sat in judgment every week from time " immemorial. Before the Cathedral was built they sat at the door of the mosque, " and the origin of the Tribunal is referred, but on doubtful authority, to the reign " of the Caliph Alhaken II. A. D. 961—76. The Court is protected by no soldier " nor policeman: it has no porter, nor clerk, nor officer of any kind, and no ad- " vocate pleads before it. A circle is formed round the door of the Apostles, and " in the midst of deep silence the judges take their seats. The guards of the dif- " ferent canals then denounce any of their receivers of water who may have broken " any clause of the Ordinances, and announce any disputes between cultivators " themselves, which are to be heard. The persons who are cited, then present " themselves in an established order, and their cases are disposed of. The accused " stands forward, the guard states the complaint and the judge, who is the Aze- " quiero of his canal, hears what the accused has to say, and cross-examines any " witnesses that may be called. The Azequiero of the canal in question then stands " on one side, and after the other judges have consulted in a low voice, one of them " pronounces judgment, and declares the sentence. It is almost invariably received " by the accused in profound silence, and with a respectful bow: but, if he objects, " the fine is doubled, and any further contumacy involves total exclusion from the " list of irrigators. In disputes between cultivators the same order is observed. " If the person accused of any infraction of the irrigation laws is a nobleman or " powerful landlord, the guard of the canal reports the matter to the magistrate, " who proceeds to the house of the accused on the following Thursday, and conducts " him to the Tribunal, saying to the Judges:—The Guard of such a Canal has " informed me of the accusation against the person who accompanies me, and I am " come to place him at your disposal. Administer justice, and I am here to see it " enforced."

" The Judges form their decisions upon the Ordinances of the different canals, " and are generally allowed to be patient hearers of evidence, dignified, calm and " just. Indeed the Tribunal is so popular that people often try to bring disputes " before it which do not strictly relate to irrigation, in their desire to avoid the " expensive justice of a more regular Court. From the decisions of the Tribunal " *de las aguas* there is no appeal."

19. The judges are simple peasant cultivators under the various channels, elected yearly, yet so dear has the institution become to the people, notwithstanding the high-handed justice exercised, that the Spanish Crown has in vain sought to abolish the power of the Court. A little reflection will, I think, show that the success of any system of irrigation must almost entirely depend on the enforcement of stringent rules, framed for the benefit of the whole cultivating community, and that if such be administered justly, the benefits cannot fail to be duly appreciated by the people.

20. Now my idea is simply this. Let the Superintendent of Irrigation take in hand and bring up to an uniform standard the whole of the Tanks in any one drainage, and then, not only be empowered to hand over the whole of the works for perpetual "up-keep" to the raiyats of each village, but further be authorized in making subsequent annual visitations, to order the infliction of a fine equivalent at least to the damage done in the interval.

21. With regard to the treatment of individual Tank bunds, I should say that after being brought to their finished section, a good gravel path at least six feet wide, should be formed along the top, and that permanent masonry sections should be built at regulated intervals of 100 or 200 yards apart [or stone bench marks placed] so that at no future occasion, there could be any dispute as to the level up to which the villagers are compelled under penalty to keep the bund. The gravel path, while answering as the village high-way, will prevent its wearing down, while as regards the masonry sections, it would only be necessary to apply the test of the ordinary mason's level to their intervening portions, or simply judge by the eye any undue wearing or depression. The simplicity of test would in itself deprive the villagers of all excuse for neglect.

22. I would also plant the whole of the back slope of every bund thickly with common aloes. These, if paid the very slightest attention to, would soon form such a network as to prevent any of the earth falling away. Several Tank bunds thus furnished may be seen in different parts of the Province, and prove conclusively the utility of the plant for this purpose. While no rain could thus take effect on the bund, it would be equally saved from the inroads of men and cattle. The leaves might always be turned to their ordinary uses in rope making.

23. With such preservative measures taken by Government in the first instance, I can see no hardship whatever in throwing the whole future up-keep on the villagers. They are now compelled, I believe, under penalty, to maintain the Revenue boundary marks formed of large earthen heaps at the corner of each field, and I will answer for it, that the preservation of a tank bund would not cost the community the same amount of labor in the aggregate, if once it were fairly turned over to them by the Irrigation Department. As raiyats are all at this moment gaining immensely by the reductions of assessment, introduced by the Revenue Survey, the present would be a most favorable moment for initiating this complete change of system.

24. One thing is to my mind perfectly clear, namely, that no Department, nor collection of Departments, can ever hope to keep going the ordinary maintenance of the 17,843 irrigation Tanks of this Province. However the idea of effecting such ordinary and trivial repairs may linger in the mind of any, I do not hesitate to pronounce it utterly futile. The work is at once too large in the aggregate, too small in detail—as well in fact attempt to keep every hut in the country in repair. Government, however well able to do the work of *bringing up* all the Tanks in succession to a recognized standard, is powerless to deal with this question of maintenance. This idea, therefore, of the obligation of Government, one of those which I conceive to be at the root of all the confusion of thought that has existed on this subject, must be discarded at once, if any real advance is to be made. I am also clearly of opinion that any half measures by which any Village community, through the exercise of personal influence or otherwise, could escape from its statute obligations, would be an equally grave error.

25. Let the inspecting Officers be high functionaries, well paid, and entirely above suspicion, and allow them to exercise their calling with the same independence of any Local Authority, as Judicial functionaries. Let their powers and obligations as regards the infliction of penalties be strictly defined, and made easily comprehensible to all—but allow no appeal from their decisions.

26. Finally, let them be empowered by regulations (having the same effect as a Statute Labor Act in Regulation Provinces) to have the requisite repairs where necessary, effected at once by the Community whose interests are immediately affected. To Captain Hay, I owe in great measure this last suggestion, and I believe Acts of this description are in contemplation for the irrigation works of Northern India and Tanjore. The Amildar has, it is true, power now to force labor where requisite; but it appears to me that, however desirable such an arrangement may be, where properly exercised, any want of strict definition of the limits, within which such power is to be exercised, must of necessity hold out the greatest temptations to oppression. The Regulations whatever they be, should be framed with the utmost care, and the provisions such that every man in the country can understand them. The above proposals may of course appear extremely high-handed, but I venture to think, that once given a fair trial in a few localities, the benefits would become so obvious to the meanest understanding, that as just now with the Revenue Survey, the raiyats of adjoining places would pray for their being brought under the System. What indeed could possibly be more productive of contentment, than a certainty of having their works put in repair, and of their being maintained so ever afterwards, not so much by the labor thrown on each individual [for that would probably not amount to a day's work in the course of a year] as by the knowledge that every man would be equally protected from those injuries inflicted by his neighbours which are now daily productive of such evil, and from which all alike both Government and the raiyats, are suffering? The centre and heart of the system, I would advocate, is in fact simply then the absolute prevention of injuries for the

future to the Tank bunds. So far from involving labor and outlay, it would reduce both to a mere nothing. My only request is that the system be fairly tried on a small scale. The expense will be little, the injury nothing, while I venture to think that if successful, the advantages would be great—indeed in my own poor judgment, quite inestimable.

27. Having now endeavoured to explain, though I fear most imperfectly, the work to be done and the means of doing it, so far as the Tank System is concerned, it may be asked, how this meets the immediate question in hand, namely, how to shape the course of this Department, so as to allow of its eventually being controlled by Native agency exclusively? To this I would reply, –

First, that the Irrigation Department must of necessity furnish the very best school of instruction for the Natives, which it would be possible to devise.

Secondly, that if the interval between the present time and the transfer of the country be properly made use of, the whole of the work required to put the Tanks in order, could be easily accomplished. The Native Government, while in fact put in the possession of the most adequate means, and best system for carrying out future new works of public improvement, may on the other hand contract at its option, all its operations without any great detriment to the people. The work as regards the existing Tank System being done, the Native Government could in fact simply limit itself to the enforcement of the Conservancy Rules. While placing at its disposal the very best description of agency, the plan I propose would, I submit, secure to it such a freedom of action, as I venture to believe, could by no other means be afforded.

28. I would now beg to advert to the bearings of the question under consideration with reference to the River Channels of this Province. As regards the main point, what work is to be done, I have already treated the subject at such length in my Irrigation Report No. 3828—507 of the 19th November 1866, paras 93 to 109, that I will only here say, that while in the gross we have some 1,203 miles of Channels, I am unable to name one that is in proper order, or one on which the most reckless waste of water is not taking place. I am compelled to say further, that excepting in regard to individual anikat and other works, executed by this Department, there has been an entire ignoring of all scientific truth. We have as a rule here also blindly followed the guidance of previous Native Governments, and thereby suffered the continuance of a state of things, which I cannot but hold to be utterly opposed to all modern ideas on the subject.

29. The management of these great works was first under the Civil Officers, and afterwards turned over to this Department, which being improperly constituted, and of altogether inadequate strength, as well as suffering under special disabilities, a Conservancy Establishment was formed some three years ago, and placed directly under the Civil Officers.

30. To show the position in regard to this establishment, I may observe, that in the first draft of the Rules, the Chief Engineer, Colonel Lawford, laid down the principle, that the Executive Engineer should be the "Ex-officio" Professional Inspector of Channels. Notwithstanding his strong and frequent remonstrances, it was decided that the Executive Engineer should not occupy this position. He was to have no initiatory power, but was simply to give his advice, when such was called for by the Civil Officers. After 1½ years of working, I felt it to be my duty to Government, to lay the matter before the Officiating Commissioner, in my letter No. 2600—336 of the 13th September 1866, for re-consideration, as it appeared to me that the position in which this Department had been placed was an entirely false one; in fact, I showed by reference to the Executive Engineer of the Mysore Division, that while the initiative to seek advice regarding these works lay, as above observed with the Civil Officer, such initiative had never once been taken. The Executive Engineer during all this time, had never on a single occasion been consulted. His functions, as regarded these great works of irrigation, were in fact reduced to nothing. The Officiating Commissioner concurring with me, that the position was an improper one obligingly authorized

the Executive Engineer inspecting the work of the Conservancy Establishment, under certain restrictions, so that at the present moment, the condition of matters in this respect is slightly better than it was.

31. Still however, I must be permitted to express my opinion that a radical error lies at the base of the present arrangement, which places the management and control of works of this description almost entirely under Civil Officers, who, I will simply confine myself to saying, have had no professional training whatever so far as I am aware.

32. In making this statement, I wish to cast no blame on any one. It is my firm belief that all who have been engaged in the settlement of this question, have been actuated by none but the keenest desire for the public good, by the utmost honesty of purpose, and altogther by the highest motives; but I feel myself nevertheless called on to say distinctly, though with the utmost deference, that there is a radical and fatal error in the system now followed, and that I can see no way of reconciling alike the demands of our present high position and duties with reference to the people of this Province, and at the same time meet the future requirements of the country when transferred to Native Rule, than by its entire abandonment and the substitution of a scientifically constituted Irrigation Department.

33. I have no desire to excite any unnecessary discussion on a matter of this kind; but still, as the point is a vital one, I must venture to make a few further observations regarding the present practice in Mysore, and what I believe to be the principles of action now recognized by the very highest authorities in the Government of India.

34. Not long since my Assistant, Captain Chrystie, R. E., inspected several of the Ashtagram Channels, and as his report was full of valuable professional remarks and advice, I considered it requisite to submit the same with additional observations from myself, to the Officiating Commissioner. I very lately received a rejoinder to this report from the Superintendent of Ashtagram (who is practically, though a Civil Officer, the head of the Channel Conservancy Establishment) criticising and condemning nearly all the professional observations of Captain Chrystie, an Officer not only held in high repute for general intelligence, but whose speciality is Irrigation Works. I was of course again compelled to write and draw attention to the inevitable professional mistakes into which the Superintendent had fallen.

35. I say all this with the highest possible respect for the Superintendent of Ashtagram, whose ability and intelligence are deservedly and universally held in the highest esteem; and therefore, I feel I can deal with this matter with the more freedom. The position he occupies with reference to the Channel Establishment, being virtually that of a professional Engineer, is, I must hold, entirely wrong.

36. To show that this is not my own opinion, but that of the highest authority on irrigation matters in India, I would now beg to quote from Colonel Strachey's remarks on the Tanjore works, paras 14 and 16 of the communication noted in the margin.

Secretary to Government of India letter No. 1651, dated, Simla, 18th October 1867.

"14. It is here necessary for me to draw attention to the somewhat remark-
"able observation of the Secretary of State, contained in paragraph 4 of his de-
"spatch, that the Collector had 'found it necessary to complain of the inefficient
"state of the Public Works Department in his District, and of the deteriorated
"condition of the very important works of irrigation from the Cauvery.' I consider
"that the fact of a Collector making such remarks, is worthy of attention on two
"grounds, first, that he should have been led to make such a sweeping attack on
"the Public Works Department in general; and second, that he should have
"thought it to be the business of the Collector to pass such a judgment on the con-
"dition of the irrigation works of the district."

"16. On the second point, it is sufficient to say that, under the system, or
"rather, total want of system, under which the irrigation in Tanjore takes place,
"the Collector is the only authority who has any special concern with the results

"of the works. The Engineers are in no sense responsible for the operation of "Tanjore irrigation works. The supply of water is regulated by the Civil Revenue "Officers, and the Engineers have only a very ill-defined position in relation to the "actual repair or construction of work. Even this it was recently proposed most "seriously to depress, when at the commencement of the present year the Madras "Government directed the entire execution of all the repairs of the irrigation works "in Tanjore to be henceforth entrusted to the Collector. The Revenue Board "protested against it, and the order was cancelled; but the fact shows the position "which an Engineer in that Province is considered to hold in relation to works of "this sort."

37. The same high authority in speaking of the Bombay works states:—

Para 26 of Colonel Strachey's letter of 17th April 1867.

"The Engineers should, I conceive, be made fully responsible for all that concerns the water-supply. . . . . they should not be liable to the interference or control of the Revenue Officers, in such matters. The Engineer should be regarded as the final authority in respect to the works and the water-supply, as the Collector should be in respect to all matters of Revenue. . . . . in short the Engineer, in charge of the irrigation should be placed in the position of an Administrative Department, acting concurrently with the Revenue authorities in respect to their special duties, and fully responsible before Government both for the maintenance and active development of the irrigation in the districts, in which they were placed."

38. As with reference to the Tanks I have no desire (indeed it would appear to be the utmost folly) to do more than commence quite tentatively with the proposed new Department, the Superintendent of Irrigation taking over perhaps no actual works at first, and afterwards only by degrees, exactly in proportion to his ability, gathering up the work of one channel after another. The present head of the Conservancy establishment, Mr. Dobbie, has, I am satisfied with all his subordinates, worked with the utmost devotion, and so far from wishing them to be summarily set aside, my only desire is, to see them eventually absorbed into the Irrigation Department, where while becoming more professional, they would have the stimulus of promotion, which is now practically withheld.

39. I have heard a no more commonly expressed opinion than that because the Public Works Officers and Subordinates are not under the Revenue Officers, there can be no harmony of action. I cannot however but think, that in the thorough independence and freedom of action of both parties, is to be found the true secret of harmony which none can wish for more earnestly than myself. To the encouragement of self-respect, high professional views, noble aims, and unity of action under scientific direction, I can alone look for success in the work that lies before us. Let the Revenue Officers be thoroughly independent professional men, and the more so the better in their own calling, but at the same time allow the Engineers to be equally independent in theirs.

40. It is almost unnecessary for me again to repeat, that in the constitution and working of a properly organized Irrigation Department, will be found the very best school for training up the Native Engineers who have to follow us—in fact I know of no other.

41. I do not feel myself called upon, in this place, to enter into any comparison of the work formerly done in this Province under the Civil officers, and that accomplished since the constitution of this Department;—but when the Commissioner now asks me to point out the errors of the present working, and suggest a remedy, I can only say, make the Department more professional, unfetter entirely its scope of action and place it in its only true and proper position, one of complete independence within its own legitimate sphere.

42. With a well defined position and plan of action, I am satisfied that true harmony would be established between the Revenue and Public Works Departments, and with this, will at once cease all those small differences, which hitherto have acted so disadvantageously to both. My firm conviction is, that by doing away with all jealousies, the motives for affording mutual assistance must gradually increase, and be productive of the most beneficial effects. I for one consider it of the utmost value to secure the thorough co-operation of the Civil officers, and if

this were my only object in making the present proposals, I believe no more direct course could be taken to insure it. To prove this position, I need only point to the hearty good will, with which the Revenue Survey Department is received everywhere—a result clearly traceable to its thorough independence of action, within its own sphere, quite as much as to the real and lasting benefits it is conferring on the community.

43. Why, I may fairly enquire, should an Irrigation Department, similarly placed, meet with a less cordial welcome? The Revenue Survey gives a man fixity of tenure, freedom from much official Interference, &c., but of itself, it grows him no more grain, it preserves him in no way from the effects of drought, it give him no better means of existence than he possessed before: if his tank be out of repair, he is the same miserable creature he ever was, and the survey gives him no help in the matter.

44. Who, on the other hand, can place a sufficient value on the work to be done by the Irrigation Department? The most accurate Judicial and Revenue systems may be introduced, surveys made, rights defined, persons and property secured, even education spread broadcast, but without the means being afforded of increasing wealth in the only way, which the physical conditions of the country admit, the people can only maintain existence—and not even that at times. In other parts of India, life and progress are not so intimately bound up with the storage of water for irrigation and domestic use, as in Mysore; and I therefore now most humbly, but most earnestly submit, that to crown all those great blessings which have been conferred by Mr. Bowring during his administration, there is this one thing needed,—the formation of a Department which shall deal thoroughly and scientifically with the whole question of Irrigation.

45. If asked, how I would arrange for the introduction of the native element into the Department, the only suggestion that at present occurs to me, is to select young men of good family, who are desirous of following the profession of Engineering, and place them as apprentices in the office of the Executive Engineer of their Division, obliging them to pass the Civil Engineering College tests, before permanent enrolment in the Engineer grade.

46. As natives of different parts of the country dread very much being sent into others with which they are not acquainted, it may be considered desirable to guarantee, that no young man so selected could without his consent be sent away from his own District; at the same time, however, (to correct any evil tendencies which might spring from such a provision) distinctly laying it down, that those who volunteered for work in all parts of the Province, would have prior claim to promotion.

47. It is of course most difficult, at the present moment to say what other immediate steps could be taken, as no native youth as yet passed the Assistant Engineer's test, and only one or two that for even Assistant Overseer in the Province, and from all that can be judged, the active life of an Engineer appears, in some measure repugnant to native ideas and tastes. Very likely the recognition of Engineering as a distinct profession, with the high status and fairly attractive pay attached to the Irrigation Department, may in a great measure alter the present condition of native feeling on the subject, but I must on the whole consider the result as doubtful, and the difficulties only to be overcome by the utmost vigilance and care.

48. I have hitherto only considered, how, it appears to me the contemplated change in the administration would affect this Department in one of its branches; but as this one occupies by far the most prominent position, it may suffice for me to observe, that in the matter of "Civil Buildings," "Communications" and "Works of Public Improvement," I think, that while an analogous plan were followed, it would be quite possible, and even desirable to sketch out now a programme of actual work to be done within the interval which must elapse before final transfer of the country. It appears to me, that the time would, with proper prior arrangements, be ample to insure the absolute completion of a complete system of works in each branch, so as to allow of nothing, but conservancy if requisite, to be exercised by the Native Government. Such a programme I should be happy to submit

for the Commissioner's consideration, if it be deemed desirable hereafter, when the main question as to the future organization of this Department, has been settled.

49. The financial question will also of necessity depend chiefly on the same issue; but that once settled, I should be most happy to submit proposals in communication with the Deputy Accountant General, for the Commissioner's consideration.

50. As regards the future position of the Comptroller, and the best mode of simplifying accounts, I can only say, that I believe the independent position of the Account Department, holds out the only financial safeguard that can be devised. In the matter of account, the present forms furnished monthly by Civil officers are only those which it is absolutely necessary for a disburser to keep, and no more: they are of the utmost simplicity, and involve no trouble whatever. So far as I am enabled to judge, there is only one right, though many wrong ways of keeping accounts, and what is ordinarily called simplifying accounts, is only another mode of doing away with accounting altogether, and not only so, but also of giving rise to complications, out of which it is often found impossible to escape. If correct, systematic accounts are not kept, there is no choice, but to resort to "cooking;" and I am clearly of opinion, that the only chance which exists of maintaining any real check on expenditure, and putting a stop to corruption is to be found in the independent position of the account branch.

51. With reference to the future position of the Chief Engineer, I must leave that entirely in the hands of the Commissioner, after weighing what I have already ventured to lay before him on the general subject of the re-organization of this Department.

52. The Government of India has lately been pleased to increase the powers of the Commissioner's sanction to Rs. 20,000 on each original work, and I trust it may not be considered unreasonable in my taking this opportunity of stating that for years past the most serious inconvenience has been experienced from the Local Administration not having had the power to appoint or dismiss Assistant Engineers or even Upper Subordinates. Perhaps, considering the contemplated changes, His Excellency the Governor-General would be disposed to concede both points.

53. As the foregoing report is in reality the natural sequel to my letter No. 3828—507 of the 19th of November 1866, already I understand forwarded to Government, I may be excused for requesting that this may also be submitted for the favorable consideration of His Excellency the Governor-General.

I have the honor to be,

Sir,

Your most obedient Servant,

(Signed) R. H. SANKEY, MAJOR, R. E.,
Chief Engineer of Mysore.

BANGALORE,
4th February 1868.

MEMORANDUM ON POINTS CALLING FOR ATTENTION IN THE REVENUE SURVEY OF MYSORE WITH REFERENCE TO THE REQUIREMENTS OF IRRIGATION WORKS, PRESENT AND PROSPECTIVE.

1. The following remarks and suggestions are made after some conversations on the subjects discussed, with Mr. Bowring, Major Sankey, and the Deputy Superintendent of Kolar. I have thought that it might be convenient to record them in a formal manner, so that the Commissioner might take any official notice of them which seemed to him desirable.

2. The Revenue Survey no doubt already distinguishes the lands as "not irrigated," "irrigated from ordinary tanks," "irrigated from tanks fed from rivers," and "irrigated from channels derived from rivers." These distinctions seem desirable.

3. The distinction between "wet" and "garden" land would, I think, be better replaced by a division into "one crop" and "two crop" land. It is not desirable to recognize a crop assessment if it can be avoided, and the basis of any charge for water should as far as possible be the quantity of water used rather than the character of the crop raised. No doubt in practice the crop does to a great extent regulate the quantity of water required, and so far rates determined by the crop are equivalent to rates determined by the quantity of water. But it seems objectionable to do anything which seems to maintain the idea that the nature of the produce regulates the Government demand on land.

4. In order to admit of the future extension of irrigation without disturbing the settlement, and with due regard to the fair claims of the Government, it seems expendient to distinguish in the case of all irrigated land between the rate due on the land as dry, and the rate due on the water. I am under the impression that this is now done by the Bombay Revenue Surveyors, to some extent at all events.

5. In each case the water rate would be arrived at by a comparison of the relative value of thoroughly irrigated land and of dry land of equal fertility and convenience of position.

6. The water rate should be reckoned by reference to a maximum rate which should represent the full value of irrigation of a complete sort. For one crop land this might amount to 4 rupees per acre for tank irrigation, and 5 rupees for river irrigation; and perhaps double those rates for two crop land. I do not intend to offer any opinion as to the precise sum to be fixed however, and these figures have been named as indicating what I gather might be reasonable. I understand that the river irrigation is actually more valuable than tank irrigation; also it is more costly to the Government, as the works cost more to maintain.

7. Possibly the higher rate should be charged for tanks fed from rivers, the supply being more certain.

8. The water rates fixed by the settlement would allow for the annual fluctuations of the rain-fall as indicated by past experience, and no remissions would be claimable on account of such variations.

9. The maximum water rate should as far as possible be made uniform for the same taluk or district, and an absolute maximum rate might probably be prescribed. The very high rates which are actually paid in some cases are quite exceptional, and if irrigation is extended, it would most likely be impossible to maintain such rates. It is plain that the tendency of the increase of irrigated cultivation must be to add to the quantity of irrigated produce and to reduce its money value, making the maintenance of very high special rates less and less possible.

10. It must be specified in every case what is the liability of the Government in respect to the maintenance of the irrigation works. I understand that the ordi-

nary practice now is that the Government maintains the chief works. It is probable that under the old system of the native Government the raiyats provided the needful labor more or less completely, but I believe that this obligation, has been allowed to fall into disuse of late years and that it can now hardly be re-asserted.

11. In the case of tanks where there is no specific agreement to the contrary, I should therefore propose that the obligation on the Government to maintain the main bund and masonry works should be recognized ; the whole cost of the distributing channels and of the distribution and control of the water being borne by the cultivators with the help of whatever service inams or village allowances now exist.

12. The settlement might determine more precisely the scope of the duties of such inamdars or village servants, and it should be made a clear rule that if those duties were not performed to the satisfaction of the Government, the persons who neglected them would be liable to be ousted and other persons might be appointed, or other arrangements made for the performance of the duties at the cost of the raiyats, if the village inams or allowances did not supply a sufficient fund.

13. If under any exceptional circumstances the cost of the maintenance of a channel from a tank was borne by the Government, the higher water rate should be charged to meet the extra cost to the State.

14. The same general principles should be followed in the case of channels supplied from rivers. The anikats and regulating works, the main supply channel with its masonry works, would be provided and maintained at the cost of the Government. All the minor distributing channels would be formed by the raiyats, and the duty of managing the supply to the village lands would fall on them also, the Government regulating at its cost the supply in the main channels.

15 Where existing custom places the maintenance of the main channels or works in the hands of a special inamdar or village servant paid by fees or allowances, (if this ever is the case); I think that the arrangement should either be terminated absolutely or at all events declared to be terminable at the discretion of the Government under any arrangement thought fair. For the proper management of irrigation channels, the persons employed to patrol and regulate supply must be directly under the orders and in the pay of the managing officer, and it would be quite impossible to secure anything like discipline or order with a body of men holding inams, &c., instead of receiving money wages and being liable to summary dismissal for misconduct.

16. It may be true that the time has not yet come for taking up thoroughly the control of the channels, but the needful powers should now be taken so that by degrees an efficient system may be introduced.

17. The above observations relate to the general considerations which seem to call for special attention in conducting the survey. I next shall refer to the arrangements under which the settlement for a fixed term of years will be made.

18. For the effectual preservation of the fair claims of the Government to an increase of revenue with any increase of irrigation, certain precautions will be necessary.

19. First, it should be with the discretion of the Government to retain in its own hands the management of all the larger irrigation works, and to adopt a system under which the benefits of irrigation are strictly paid for according to the actual advantages given to the raiyats. This would be done by charging a special water rate, on the actual area irrigated, or supply of water given, either year by year, or for short terms, so that any reasonable increase of rate might be made in the future. Experience has shown that for the satisfactory management of irrigation works, measures must be taken for ascertaining actual acreage year by year. This being necessary in an administrative point of view, the data on which to reckon the charge for water are given, and the system of making an annual charge readily follows.

20. But this plan is of course only suited to the larger class of works, and

would be utterly inapplicable to the minor tanks which supply so large a proportion of the irrigation of Mysore. It would therefore be desirable to make a rule by which special orders should be obtained from the Commissioner, as to the mode of management to be followed in all the large tanks before the settlement is completed. Perhaps an area of from 300 to 500 acres might be regarded as the limit beyond which direct Government management might be feasible.

21. For the minor tanks no doubt the settlement should go on just as though there were no distinction made between irrigated and un-irrigated lands. All that should be done in these cases is to secure to the Government the means of adding fairly to the assessment if the water supply is improved after settlement of the revenue.

22. The assessment with the separation of the water rate at once permits of this being done. After any improvement has been made, it will be ascertained what land has had its facilities for irrigation improved, and an addition will be made to the revenue on this account, according to the Survey rates. For instance, if in a holding of 50 acres, 30 acres are assessed at dry rates, 10 acres at the maximum water rate, and 10 acres at half the maximum water rate; and that an improvement is made by which the 10 acres first assessed at the half water rate are fully irrigated, and 15 acres of the former dry land are three-quarters irrigated, then the 10 acres will be charged the full water rate, or a half rate more, and the 15 acres will be charged a three-quarter water rate which before only paid the dry rate.

23. After an improvement, the actual extension of irrigation might be tested for, say 3 years, and on the results so obtained a new settlement made to continue to the end of the existing general settlement, or for any shorter period thought proper.

24. In the event of an improvement on a large scale, the Government must of course have the power to take up the management itself, as in the case of a reserved work, or an altogether new work. Also any second improvement would be dealt with in like manner, no second settlement interfering with the right of Government to increase the water rate for further improvement.

25. With reference to the minor tanks, another consideration arises. It will be extremely difficult, if not quite impossible, for the Government to undertake to make all improvements which are desirable under its own agency. Two cases may arise in connection with minor improvements. First, that the raiyats will themselves provide the whole sum of money or labor necessary, and second, that they will provide a portion of it.

26. If the raiyats provide the whole cost, and effect a complete restoration of a work wholly useless now, the following plan is suggested as suitable. That the raiyats should agree to maintain the work at their own cost, and on failure, things to go back to their former position. That the land irrigated from a tank thus restored should be charged only half the ordinary water rate, and that this advantage should be perpetual. Thus, on the expiry of the existing settlement, the new assessment would deal with the dry rates like those of all other lands, but the water rates would not be increased to a higher rate than half the maximum.

27. If the raiyats provide only part of the money or make an improvement to a work already partially in use, then a corresponding reduction might be made in the water rate on the additional area irrigated, till the end of the current settlement only, after which the work would be treated like a common Government tank. Thus if the raiyats supplied half the money, the reduction would be one-fourth of the water rate and so on.

28. In all cases the Government would reserve to itself the right of determining what works could be made over to raiyats and in what cases the Government should carry out operations itself. Also due care should be taken to see that no danger to other works is likely to arise from any work handed over to raiyats.

29. Next it is important to arrange for the transfer from the Government to

the raiyats of the obligation to maintain all the smaller tanks. The necessity for the Government taking up the petty repairs of the multitude of tanks which exist in Mysore, is a very great difficulty which should as far as possible be got rid of.

31. Therefore it might be declared that the Government should have the power of requiring the raiyats to undertake the maintenance of all minor tanks under some such system as the following.

32. The average cost of maintenance should be ascertained in each case, referring to the actual expenditure for the last 6 or 8 years, and giving any fair moderate increased sum which was thought right. This sum would be deducted from the assessment in consideration of the ordinary repairs being carried out by the raiyats.

33. The works would be inspected from time to time under suitable arrangement by the Revenue and Irrigation officers, and when any neglect was observed, notice would be given to the raiyats to make good the defects in a reasonable time. If this was not done, the work would be carried out by the Government, and the actual cost, with an addition of 25 per cent to cover the expenses of Government, would be levied from the raiyats, the payment being enforced, if necessary, as though the sum due were an arrear of land revenue.

34. Suitable power should be given to some one among the raiyats who should be named to superintend the repairs, to admit of his obtaining the needful labor, or contributions of money from the body of the cultivators. Either the deduction allowed from the revenue would be made over to him, or he should have special facilities for obtaining a summary decision in case of any individual raiyat refusing or neglecting to bear his share of the work.

35. The obligation to maintain works improved at the cost of the raiyats as before proposed, should be enforced under the same system.

36. The failure of any raiyat or body of raiyats to act fully up to their obligations in relation to tank maintenance should justify the Government in breaking the settlement, or any agreement come to as to a reduced water rate being levied.

37. If the raiyats anywhere declined to carry out the improvement of a small tank, or object to enter into an arrangement for maintaining it, as just explained, the Government may entrust the work to any one ready to take it up, and such a person should receive the advantageous terms that would have been given to the raiyats, or the powers necessary to levy the needful contributions for repairs, as the case might need. A farmer or contractor thus introduced should have an absolute title to retain his farm or contract for any term of years agreed to by Government or till the end of the existing settlement. Then the raiyats might take up their ordinary position on paying the farmer compensation for the improvements made as his cost.

38. This disposes of the matters calling for notice in relation to the minor works, which the Government would not care to manage in detail. For larger works and the river channels, some further remarks will be made.

39. As before observed, under a system of direct management, a knowledge of the actual area irrigated from time to time must be considered essential. To ascertain this, it will be necessary to have a detailed record of the area of all fields, and the survey should therefore extend its computations and records to the fields and not stop at the survey numbers. It will also be necessary to provide for the survey and record of new fields formed from time to time, as irrigation extends, and also for changes in boundaries. Experience shows that this is requisite, and provision should be made for it in the case of all the larger works.

40. Although I consider that it is necessary for the Government to reserve its right of increasing the water rate on irrigated land from time to time, yet it may perhaps be thought expedient on the first introduction of the survey and new assessment, to deal with the land holders occupying lands irrigated from river channels on terms as nearly as can be the same as those given to raiyats having tank

irrigated lands. Therefore it may be wished to settle the water rate for the channel irrigated lands for 30 years in the first place, and to leave the claim to increase the water rate in abeyance for the present as regards lands *now* irrigated. For any lands which may be brought under irrigation *after* the settlement is made, there could be no reason for making any such provision, and for these the right of Government to raise the water rate at discretion should be affirmed, it being understood that the rate would not be changed oftener than at the end of 5 years from the last fixing of the charge.

40. If a settlement be made thus for 30 years on channel irrigated land, or land under the largest class of tanks, it should I think only be allowed when nearly all the irrigable land is now under cultivation and irrigated, or when such lands are in a compact block. It would be very inconvenient to have lands on which a yearly water rate would be charged, mixed up with others on which the water rate was fixed for the 30 years of the settlement.

41. Also no such settlement should be made unless the total water rate charged amounted to the maximum rate on the whole area, less say 20 per cent. If this be not the case, it would show that the irrigation was so likely to be improved as to lead to considerable alterations in the assessment in the future, under the system already explained as applicable to extension of tank irrigation; for this of course would also apply to improvements in the irrigation of settled lands under channels.

42. If these concessions were not thought necessary, however, all the lands under channels or large tanks which it was intended to bring under direct Government management might be settled for 30 years, so far as the dry assessment went, and for 5 years as regards the water rate. It would then be optional with the Government to introduce at any time any system of charge for the water which was thought best, and to substitute it for the survey water assessment at the end of the 5 years, or any further time that was convenient, the survey rates being meanwhile extended till the new system was ready.

43. So far as my experience enables me to form an opinion, I am inclined to think that the proper course to follow in the assessment of water rates on irrigated lands would be somewhat as follows.

44. To ascertain as exactly as possible from year to year the actual area irrigated under the several crops. At the same time to ascertain the quantity of water applied to the irrigation. To define by degrees the supply given to separate villages, or plots of land, and to limit the quantity by a fixed sluice to what experience shows to be needed for the lands.

45. When a complete control has been established on the distribution of the water, and a fair knowledge has by actual experience been got of the average irrigated area, to make a contract agreement with the land holders that they shall pay a fixed lump sum for each fixed opening irrespective of the actual area irrigated. Such a contract to be for five years on a somewhat reduced rate; an allowance of 20 per cent on the full maximum rates would seem fair.

46. By following up such a system, the Government would be in a position to extend constantly, and as far as possible, the useful effect of the available water supply, and at the same time to take fair advantage of the natural increase of rates which might be fairly hoped for with general increased prosperity of the country. The terms of the contracts might be increased beyond 5 years, if experience showed it to be desirable, but at present I think that 5 years is quite enough.

47. The rules under which the water rate would be charged would provide for any special adjustments either for failure of crops, or for single waterings of special crops, or special rates of any sort. As a rule, there should be no reduction of rates unless the supply was so far short as to cause sensible deterioration in the crop, and perhaps three-fourths of a full supply might be about the limit.

48. To carry out such a system, it would be clearly necessary that the distribution of the water in the irrigating channels should be under the full control of the officer in charge of the works. The first principles which should regulate the distribution of the water would be that the available supply should be considered applicable to all the lands irrigable in equal proportions, without admitting of any priority of claims on account of position, &c. The intention should be to extend the advantages of irrigation to the largest possible area of land.

49. To accomplish this, the irrigation officers should have power to make any needful change in existing arrangements, it being left to every individual who considered that he had been injured by such a change to appeal to the revenue officers, and on proving his case he being allowed a proper compensation, by a reduction of his revenue assessment or otherwise.

50. It would of course be proper to take all due care that attention should be paid to objections before changes were carried out, and a system of appeal and supervision under superior authority should be established to prevent the inferior irrigation agents doing what was objectionable in these or other matters.

51. Certain police powers should also be given to the irrigation officers to admit of the summary stoppage of all irregularities in connection with the water supply. Experience has every where proved that to be effectual the repression of offences of this class must be exercised on the spot and in a summary way.

52. The only other point which seems to call for notice is the position of inamdars or persons holding lands under Government in any special manner, in relation to irrigation. It is very desirable that the rights of all such persons should be defined exactly.

53. If an inamdar holds irrigated land, the equivalent water rate on that land should be recorded. It cannot equitably be held that he has any right to any water supply better than that which he now has, and if an improvement is made, he is fairly liable to assessment for the advantage which is not part of his inam. In practice the only way of defining the water supply will be by stating the equivalent money water rate, which will at once afford a ready means of comparison with the adjacent raiyats' holdings.

54. The liability of inamdars to share in the cost of maintenance should in like manner be distinctly recorded. I understand that on the revision of the titles of inamdars it may be possible to induce them generally to assent to share the cost of maintenance of works now kept up by Government from which they benefit.

55. If so, it will of course be an advantage. I further need only remark that the exact nature of the liability should be defined in such a way as to prevent all question hereafter as to the precise mode of estimating it.

R. STRACHEY,

Inspector General of Irrigation Works.

BANGALORE, 22*nd February* 1868.

GOVERNMENT OF MYSORE

General No. 6689. } 1867-68
Establishment 153. }

MYSORE COMMISSIONER'S OFFICE,
Bangalore, 27th February 1868.

From

The Commissioner of Mysore.

To

The Secretary to the Government of India,
P. W. Department, Calcutta.

SIR,

The future constitution of the Public Works Department in Mysore being a subject of the greatest importance in connection with the recent orders of Her Majesty's Government regarding the Province, and the existing system requiring in my opinion considerable modifications in order to admit of the Department being controlled hereafter in its details by a native agency, I venture to submit the following remarks for the consideration of His Excellency the Viceroy and Governor General in Council, although from the inherent difficulty of the subject and the diverse opinions which are entertained on it by professional and unprofessional authorities, I do so with great diffidence.

2. Being especially anxious to ascertain the views held by the Chief Engineer of Mysore on this important question, I addressed him on the 3rd ultimo enquiring what are in his opinion the practical defects, if any, of the existing system as to the execution of work by the Department and Civil Officers respectively, the nature of the control exercised and the audit of accounts; also whether a further amalgamation could be accomplished with a view to greater simplicity and uniformity of action and to removing from the superintendence of the officers of the Department, Public Works, all works which do not absolutely need professional skill. The Chief Engineer was further asked whether in such case some reduction of establishments under Civil Officers was not possible. Major Sankey was moreover invited to express an opinion as to the future position of the Chief Engineer and Controller, and whether it would be expedient to give the Superintendents of Divisions any control, (and if so, what control) over Executive Engineers.

3. In the accompanying letter No. 661—60, dated 4th February 1868, the Chief Engineer has at some length propounded his views on the general questions, and more particularly in respect to works of irrigation, the proper system of repairing which is in fact the real difficulty. Like most reports emanating from Major Sankey, this letter is suggestive, full of interest, and betokens great ingenuity and invention. To speak plainly, its scope is to assert that the elements of success are solely to be found in the entire separation of the Department from the control or interference of the Revenue Officers, that special Establishments should be formed for carrying out all irrigation works, and that the natives who constructed the tanks and their European successors have been hitherto proceeding on an essentially vicious system, which has been based on wrong principles and has been wholly wanting in professional knowledge.

4. Before offering any suggestions of my own, I shall lay before the Government a sketch of the opinions entertained by the people of the Province and the leading officials on the subject. The Government are aware that all the great irrigation works in Mysore, both tanks and channels, were constructed by the people of the country, and that it would probably be very difficult to find out any site not hitherto occupied where work of erecting a new tank would not entail a very heavy outlay. One could tell off all such places on one's ten fingers. It is indeed marvellous how in former days, with their rude contrivances,

unscientific acquirements, the Native Engineers could study the natural features of the country so accurately as to construct works, which in some instances have lasted 400 years, and in many of which the solidity of the structure and the ingenuity of the details excite the admiration of European officials. The bridges over the Cauvery in three places, as well as that over the Cabbany, both first class rivers, were designed and carried out by the Native Engineers. All the irrigation channels, varying from a few miles to 100 in length, were similary devised and laid out under native superintendence, while nearly 20,000 tanks, many of which have colossal sluices, escapes and embankments, owe their origin to the people of the country. It is probable that many similar undertakings were abandoned having been commenced on erroneous data, but these were certainly exceptional cases, while the command of labor under a despotic rule enabled the Government to carry all the rest on to completion. The former Rajas doubtless in the firt instance looked to the profit accruing to the State from these undertakings, but there is no reason to suppose that they had not also in view the national prosperity and happiness of the agricultural population. It may certainly be said of Mysore that prior to the usurpation of Hyder Ali, or perhaps more accurately to the arbitrary rule of his son Tippu Sultan, the irrigation works of the Province supplied the people with an abundance of grain far more than sufficient for their own wants, that they fully answered the purpose for which they were constructed, and that consequently whatever has been done since has been to maintain these works more or less completely in order.

5. More than 60 years ago, during the time of Purnaiya, the Resident Major Wilks calculated that the annual average expenses of tanks ought not to be taken at less than Rs. 3,75,000, whereas now, notwithstanding that labor and materials have trebled in value, the sum allotted to such repairs is but Rs. 2,50,000. Taking the Budget of 1868-69 as an index, it will be seen that the allotment is described as follows :—

Original Works.		*Repairs.*	
Civil Buildings ...	...1,33,500	Civil Buildings ...	... 5,000
Agricultural ...	..1,92,000	Agricultural ...	...2,50,000
Communications ...	...2,78,000	Communications ...	...3,40,000
Miscellaneous Public Improvements ...	57,000	Miscellaneous Public Improvements ...	3,000
	6,60,500		5,98,000

These two items, or 12,58,500 + 3,88,500 for Establishments, and + 50,000 for Tools and Plant, make up the sum of 16,97,000, the total allotment for the year. The total amount of the estimates for the original agricultural works (entered for the year's outlay at 1,92,000) is no less a sum than 14,89,647, or say 15 lakhs. One may well be concerned when one considers that this large amount is over and above all ordinary repairs.

6. A glance at the figures given by me will show at once how differently the State revenues are now expended on Public Works from what was formerly the case; that is to say, that the expenditure has in great measure taken another direction, and that Communication, Civil Buildings and Establishments form heavy and for the most part unavoidable items of charge. Communications alone cost 6,18,000, and it is difficult to see how this sum can be reduced with advantage. The sum allotted to Civil Buildings, *viz*,, 1,38,500, is devoted to District and Taluk Cutcherries, Jail Hospitals, School houses, &c, some of which classes of buildings were in former days either considered wholly unnecessary or built of rude and temporary materials. Though such works could not now be dispensed with, I believe they could be built as cheap and as well by the Civil Officials as by the Departmental Officers. The Establishments again are very costly (*viz.*, 3,88,500 for the year referred to), exclusive of small establishments under Civil Officers, not so much from the numbers employed as from the comparatively high salaries of European Officers and European subordinates.

7. When the revised Public Works Department was introduced into Mysore in 1856, the Government doubtless entertained sanguine hopes that a powerful department superintended by skilful Engineers intimately acquainted with all branches of their profession, and aided by zealous, hardworking and honest subor-

dinates, would achieve success hitherto unheard of. The idea was a grand one certainly, and the Native Officials contentedly handed over the share they formerly had had in superintending Public Works, and awaited the result. The Public Works Department cheerfully took over all details of every description down to the aid of the local Native Officials, and were as independent of all control as Major Sankey would apparently wish them again to be. It is hard however to kick against the pricks, and the custom and prejudices of the native mind offer a patient negative resistance to thebest intentions. It was not long before the discovery was made that the Department had undertaken far more than it was able to manage, that much of the work done was not so good as that formerly executed, and that in numerous cases the complicated machinery of a watch was, so to speak, being employed to wind up a smoke-jack. The entire separation of the Department from the general administration which Major Sankey I am surprised to see still insists on, was notoriously the main cause of its indifferent success, for it aroused opposition on the part of both European and Native Officials, the latter of whom were not slow to cast stones and to sneer at the Departmental Officers whenever opportunity offered.

8. In 1862-63 an attempt was made to divest the Department of the execution of petty repairs of all kinds not demanding professional skill and superintendence, and a certain sum was allotted yearly to the Civil Officers for the purpose. In 1864-65 the strength of the Public Works Department was also greatly increased, and there are at present nominally (for some officers are absent) one Executive Engineer for each Civil District, besides 6 Assistant Engineers and a proportionate number of subordinates, as shown in the appendix. As matters now stand, both the Chief Engineer and the Civil Officers demand extra aid, and I purpose showing how in my opinion this may best be rendered, bearing in mind what seems to me the absolute necessity of revising the establishments in such a manner as will admit of all ordinary work being taken by the Civil Officers, so as to enable a future Native Government to control the greater part of the operations of the Department. It will suffice to say here that although in some instances there is hearty co-operation between both classes of officials, and although both are undoubtedly anxious to carry out the views of Government to the best of their abilities, there is an evident clashing of authority which is detrimental to the interests of the State and to the efficient supervision of the Public Works of the Province.

9. In the accompanying letter, Major Sankey argues (1) that the natural forces which influence the tank system are entirely under control, (2) that tanks being mutually dependent works, it is a mistake to deal with one of them individually, (3) that hitherto the repair or re-construction of one of such works has been the rule instead of ensuring absolutely the maintenance and up-keep of all of them together. On the first point, it appears to me doubtful whether the mere fact of a rain-fall, being confined within a certain number of inches yearly, warrants a theory that the natural forces are so much under control as to enable us to prevent any tank in the Province from bursting. Doubtless this is partially true, if it were possible to incur a heavy outlay in constructing embankments and kodis of sufficient height and solidity to resist in all cases the action of floods. The normal state of the natural forces referred to seems to be one of alternate floods and droughts, the latter insidiously for many months destroying artificial works in a manner which makes them less capable of resisting the former. It is true that height, and not strength, in an embankment is the main security, that is, that so long as the bund is not topped by the waves, there is little chance of its being breached; but I have observed in the few instances where the ancient embankments of tanks have remained intact, that they are of great strength and width, as well as height, from which I infer that mere height, if not perseveringly maintained, and such assiduous attention is not to be expected from orientals, would not have sufficed to protect the bund from injury.

10. I believe Major Sankey is quite right in saying that tanks are mutually dependent on one another. Such is certainly the case generally, and although there are great numbers of isolated tanks in particular localities, the vast majority are constructed on a connected system of streams and their feeders which are abundant in an undulating country of high level like Mysore. The reason I conceive why repairs have generally been made to individual tanks is, that as the whole of the works never were in perfect order, the Government naturally selected for re-construc-

tion those which seemed most likely to benefit the State revenue. Such tanks were generally low down in the chain, and their value increased relatively to tanks higher up, which were more liable to be filled up and rendered useless by the accumulated silt of each year. The drainage and system of the Province will be found sufficiently illustrated in the tank maps prepared in the Commissioner's office, which Major Sankey has made use of to illustrate his interesting report in reply to your Circular No. 25 of 22nd March 1866.

11. I cannot help thinking however that this Officer has laid undue stress on the supposed laches of the Native Government and its successors up to the present time, and that the 30 lakhs referred to in para 10 as having been spent on repairs of tanks were not altogether wasted in perpetuating a vicious system. I may add that I cannot find any trace that the professional officers, who during the Raja's administration and the subsequent period of our direct management assisted the Government with their advice, objected to the practice of repairing individual works. I am not aware indeed that Major Sankey himself prior to his letter No. 3828—507, dated 19th November 1866 propounded a theory that to do so was a fatal error. While therefore I concur with the Chief Engineer in many of his observations, and particularly as regards the indifference of the cultivators themselves, who wilfully or carelessly suffer their tanks to be injured, I am not alarmed at the present state of affairs though I do not consider any skill or science can prevent the natural accumulation of silt, the most potent agent in rendering useless the smaller tanks at the head of a chain of these works.

12. I have no objection to offer to the Chief Engineer's proposal to organize an Irrigation Department, with the view of examining specially the various systems of drainage and carrying out effectually the repair of tanks referable to them. I deem it essential however that the labor should be found by the Civil Officers, who must also be consulted as to the land under the tanks. As I observed in my Administration Report for 1865-66 in respect to the repairs effected to the Sulikere tank, the system of procuring labor and supervision through the Revenue Officers and professional advice and assistance from the Executive Engineer, appears to be the true one and that best suited to the country.

13. I do not consider that councils of Gaudas or Headmen of villages could be held with any utility in this Province to deliberate on irrigation matters. Such a plan may answer in Spain as observed by Major Sankey; but I am persuaded that in India direct Government supervision is essential to maintain irrigation works in order. When the Revenue Settlement has been completed and 30 years' leases have been given to the raiyats, I think, as I ventured to suggest in my report for 1865-66, that the Government should compel them to keep the tanks in good order, though I would give them a grant-in-aid, if necessary, according to the circumstances of each village. I do not anticipate any particular difficulty in this, but to bring up to uniform standard the whole of the tanks of even one drainage, as proposed by Major Sankey in para 20, will be a costly business and a very long one.

14. The suggestions in paras 21 and 22 are deserving of notice, especially in regard to the encouragement of the growth of aloes, &c., in embankments.

15. As regards irrigation channels paras 28-35, I am unable to concur with Major Sankey altogether in his remarks. These channels were entirely constructed by Native Agency, and I question whether any Engineer of the present day could have laid down the contour lines more ingeniously. Doubtless modern science can improve upon the ancient dams; but I take leave to question whether estimated returns of revenue from our expensive recent structures are reliable. The estimates of the projects which induce the Government, in the first instance, to enter upon the prosecution of the works are exceeded, and even double, while the details of the projects require so much accuracy and occupy so long a period, that when the work is actually completed it is found that the revenue result is surprisingly unsatisfactory. The Maddur Anikat was to have cost Rs. 50,500. It actually cost Rs. 83,000. The Sriramadevara was at first estimated for at Rs. 1,20,000, whereas the present estimate is Rs. 1,99,000. I do not however deny the superiority of the new works, if the materials are to be depended on as durable; and this will be the real test, which we cannot apply till some years have elapsed.

16. I have suggested to the Chief Engineer that when either he himself or one of the Executive Engineers visits the irrigation channels, the District Officer should be requested to be present, also any controversy which has arisen regarding conservancy of the channels, (which are I consider now in better condition than when under the control of the Departmental Officers) has probably been mainly owing to a failure to observe this practice. The truth is, however, that the radical defect of the channel system consists in the want of a proper survey of the land under the channels, and this cannot be effectually corrected till a Survey party is set free to measure and classify the land and to equalize the rates of assessment. I do not agree in the correctness of the remarks made by the Chief Engineer in paras 34 and 35, such not being borne out, in my opinion, by the correspondence referred to; but the whole question hinges upon the point whether the Public Works Department should be absolutely free from all control in irrigation matters. Theoretically, it is true that professional men should not be fettered and interfered with by unprofessional people who have had no scientific training; but practically, the command of labor and the facility of carrying out works quickly and economically, are not entirely regulated by professional considerations, while an "*imperium in imperio*," such as Major Sankey advocates, is not I think, suited to the genius of the country or malleable by a Native Agency. Moreover, I am unable to admit that there is no constructive talent in a country whose inhabitants built and devised all the tanks and channels that we see around us; and I believe that a special Department working in co-operation with the Revenue Officers is more likely to secure such talent as is among the natives than one which is avowedly free from all conditions. The Revenue Survey to which Major Sankey refers scarcely affords a correct parallel, inasmuch as its operations are of a temporary nature, but when labor is required by them for putting up boundary marks they apply to the Revenue Officers for assistance and could not, without their co-operation, carry out this branch of the Survey work.

17. In paras 45-47, the Chief Engineer discusses the best method of introducing the native element into the Department, and offers some useful and practical suggestions on the subject. We have great difficulty at present in securing any youths of the superior classes for the Public Works Department, partly because an out-of- door life and a practical professional education are apparently distasteful to those whose fathers have always been employed in sedentary occupations, and partly I apprehend because the Revenue service holds out prospects of quicker advancement and better pay. When the Survey and Settlement Department have remedied the inequalities now found in assessments, and have barred some of the many facilities for adding to fixed salaries which an unsettled system presents, it is probable that the purely revenue branch will not be so attractive a service as it has hitherto been. I am not however very sanguine about ever obtaining at any time a superior class of Native Engineers, and I fear we must fall back upon the old Mestris or Sub-Overseers, who after all were the men who in former days constructed and repaired the great irrigation works of the Province. This is the class which was swept away by a grievous error after 1856, and their resuscitation affords, in my opinion, the only hope of success in so re-constructing the Subordinate Department of Public Works as to admit of free recourse to Native Agency.

18. In respect to Civil Buildings, I have always failed to see why the Civil Officers should not themselves build what is required, whether District or Taluk Cutcherries, Schools or Jails, &c. There are model designs for almost all classes of buildings, and I consider it desirable that the District Officers should carry out these works themselves. A man building a house for himself is content to employ a Mestri, and if as much attention is paid to Government buildings as to private dwellings, there is little fear of money being wasted. Distinct responsibility and close supervision appear to be the great essentials for securing an economical expenditure on such works.

19. As regards ways and means, I should gladly see the sum of 30 lakhs now invested in Government Securities invested instead in profitable works, and I believe under proper management that this may be so done as to ensure to the State a higher rate of interest than that now accruing.

20. It may be interesting to the Government to know what are the opinions entertained by the Superintendents of Divisions on the important question of repair-

ing effectually the numerous irrigation works of the Province, especially as they differ in many essential points from the Chief Engineer.

21. Colonel Dobbs, now retired, the most experienced Officer of the Commission, and an ardent advocate of the former system, in his letter No. 3803—106, dated 22nd February 1867, adverting to the fact that thousands of tanks are scattered over the country (there are 4,000 large and small in the single District of Kolar), urged that they could not possibly be kept in repair by any separate Department, that the whole revenue machinery was needed for keeping these great arteries of agricultural life in working order, and that nothing short of a radical return to former practice would be of any material benefit. He admitted that the Amildars (Tahsildars) had now grown rusty, but insisted strongly that they should in future be held responsible for the efficient state of the tanks within their respective Taluks. He advocated giving them full authority to prepare estimates and complete works, and supplying them at all times with sufficient funds for the purpose. He added that villagers should be held responsible for procuring stone Waddars and for carrying out earthwork rapidly, that the District Officer should constantly be in the saddle supervising his operations, and that an Assistant Engineer should be attached to each District to carry out the instructions of the Deputy Superintendent.

22. Major Elliot, Superintendent of the Ashtagram Division, in his letter No. 4,052—112, dated 16th March 1867, considered that an amalgamation of the Revenue with Public Works Department would be beneficial, and recommended the nomination of Assistant Surveyors to the Districts, and the appointment of a Mestri on increased pay to each Taluk.

23. Captain Hay, Superintendent of the Nagar Division, in his letter No. 294—38, dated 20th August 1867, expressed his opinion that it was difficult to institute a thoroughly satisfactory comparison between work now done and that executed formerly. He remarked that the native opinion was opposed to the Public Works Department, partly as being subversive of the native idea of concentrating all departments under one authority, and partly because it was asserted that the work done by the Public Works Department was more dilatory, less in quantity, worse in quality, and more expensive than in former days; but Captain Hay hesitated to accept these assertions as strictly correct. He thought that Colonel Dobbs personally having taken a great interest in irrigation works might have accomplished in his time more than is now done in the Chitaldroog District; but as regards the division generally, did not see any reason to believe that more was effected under the old system, prior to 1856, than has been done since by Civil Officers. Captain Hay added that he had not sufficient data to institute a comparison between work now performed by the Public Works Department and that formerly executed by Civil Officers. He stated that in Revenue and Judicial business greater exactitude was now demanded from Amildars than formerly, and their arbitrary powers of compelling the raiyats to provide labor and materials for tank repairs had been greatly curtailed. With reference to these facts, the Deputy Superintendent of Shimoga recommended an increase to the Amildars' Public Works Establishments, and added that in his opinion all executive departments in a district should be under the Deputy Superintendent. The Deputy Superintendent of Kadur in the same Division pointed out the delay which arises in procuring sanction for works above Rs. 200, and advocated all repairs being left to District Officers. The Deputy Superintendent of Chitaldroog could not find any fault with the present system, and stated that no Engineer Officer would work under a District Officer as proposed by Colonel Dobbs. The Deputy Superintendent added that formerly labor was frequently forced and that accounts were not kept so strictly as now.

24. The above resumé, taken in connection with the Chief Engineer's letter now submitted, will suffice perhaps to throw some light on the features of a very difficult question which has for many years been a source of trouble and anxiety; and I therefore pass on to a consideration of the Establishments which in my opinion will be needed for carrying on Public Works efficiently hereafter, provided that the details generally are to be superintended more extensively by Native Agency.

25. Leaving out for the moment the question of a Special Irrigation Depart-

ment, I propose to make the following alterations in the existing establishments:—

1. The Chief Engineer to be Secretary in the Public Works Department to the Commissioner or the Resident, with an Assistant to control the accounts.

2. An Executive Engineer to be attached to each Civil Division, to be the professional adviser to the Superintendent.

3. An Assistant Engineer to be attached to each Civil District, to hold the same position relatively to the Deputy Superintendent that the Executive Engineer holds to the Superintendent.

4. The Upper and Lower subordinates to be reduced to one half the present number, the remaining half to be at the sole disposal of the Chief Engineer for the construction of roads and other works immediately under his orders.

5. A Surveyor and Estimator to be attached to each Civil District as at present.

6. A Mestri or Native Sub-Overseer to be attached to each of the 83 Taluks in lieu of the 34 Mestris now entertained.

7. A Mutsaddi to keep accounts to be attached to each of the 83 Taluks of the Province.

26. Dividing the establishments into the budget heads of (1) Direction' (2) Construction, and (3) Accounts, the recommendations which I have to make will be found in the appendix.

27. The total cost of existing establishments according to the budget for 1868-69 being as shown in the Appendix Rs. 4,07,240, and according to the revision proposed by me Rs. 3,58,448, I recommend the saving to be applied to the formation of a Special Irrigation Department under the supervision of Captain Johnson or other competent Officer who should draw the maximum pay of an Executive Engineer of the first Grade, *i. e.*, Rs. 1,250, and have under him such a staff as may be fixed in communication with the Inspector General of Irrigation. He should be Under-Secretary to the Commissioner, and convey that Officer's orders direct to the officials concerned. I name Captain Johnson because he has had more experience of Irrigation works, and particularly of the Ashtagram channels, than any other Officer in Mysore, and because he has been specially recommended by the Chief Engineer and the Officiating Commissioner Mr. Saunders. I am not ignorant either myself of this Officer's aptitude for the office referred to. The channels in the Mysore and Hassan Districts of the Ashtagram Division are at present under the supervision of a Superintendent Mr. Dobbie, a promising young officer who has under him an Establishment costing Rs. 25,000 yearly. This Establishment is of very long standing, but was recently revised and reduced in number, and it is unlikely that any further reduction could be usefully effected.

28. I venture to think that the changes recommended by me are in the right direction, and that they will tend to revive that class of Native Engineers who were formerly the life of the Province, and who were, as I cannot but think, erroneously nearly extinguished by the introduction of the Public Works Department in 1856. It is true that they were imperfectly educated, and that their training was not scientific, but their practical experience enabled them to do their work fairly enough, and we must remember that after all the execution of details of all work in India devolves ultimately on the subordinates of the scale, just as the orders of the Commissioner are given effect to finally by the accountant of a village. If the experiment fail, I have no hesitation in saying that it will be utterly impossible for a Native Government to carry on any public works without a large introduction of the European element, which will in all probability be hereafter impracticable in Mysore. I do not expect that we shall be able at once to obtain the full number of Mestris mentioned by me, but I think that, with a little patience, and by not laying at first too great stress on scientific acquirements, there is every prospect of eventual success.

29. The position of the Chief Engineer will, it appears to me, be greatly strengthened by my proposals, for, while preserving his legitimate control in all scientific matters specially relating to the Public Works Department, he will, in regard to the supervision of all works entrusted to the Civil Officers, carry with him as Secretary all the weight of the Commissioner's influence, and I confidently hope that under such an arrangement the two branches of the administration will work harmoniously in concert. I am persuaded that, in regard to ability and energy, a better Chief Engineer and Secretary than Major Sankey could not be found.

I have the honor to be,

Sir,

Your most obedient Servant,

(Sd.) L. BOWRING,
Commissioner.

N. B.—This letter has been printed from an imperfect and unauthenticated copy, the original not being available. W. R. J.

General No. 198 } 1868-69.
Revenue No. 13 }

MYSORE COMMISSIONER'S OFFICE,

Bangalore, 15*th April* 1868.

From

The Commissioner of Mysore.

To

The Secretary to the Government of India,
Foreign Department, Calcutta.

SIR,

1. Referring to your letter No. 88, dated 3rd instant, forwarding a Memorandum by Colonel Strachey "on points calling for attention in the Revenue Survey of Mysore, with reference to the requirements of Irrigation works present and prospective," I have the honor to state that as Major Prescott the, Acting Survey Commissioner, recently visited the Province, I requested him to proceed to Bangalore with Captain Grant, the Survey Superintendent, in order to consider the several points brought to notice, in communication with other experienced officers.

2. A Committee was formed, consisting of the following officials, European and Native :—

L. Bowring, Esq.	..	Commissioner.
Captain J. A. Campbell	..	Secretary.
Major Prescott	..	Survey Commissioner.
Captain Grant	..	Superintendent of Survey.
Major Sankey	..	Chief Engineer.
Captain Campbell	..	Assistant Chief Engineer.
Major Pearse	..	Superintendent of Nundydroog.
Mr. Arnachalam Mudlr.	..	Head Sheristadar.
Mr. Krishnaiengar	..	Deputy Superintendent of Kolar.

3. Notes of the Proceedings of this Committee were taken by the Secretary and a resumé will be found in the paper which accompanies.

4. It will be observed that the Committee went carefully through Colonel Strachey's Memorandum, and I believe that the resolutions shown, which were arrived at after full discussion, will be found clear and intelligible, while I am assured that in practice they will be feasible.

5. It appears to me preferable to submit this paper than to answer in detail the questions put in your letter under reply, because all the main features of the enquiry received full and anxious consideration from the Committee and are very explicitly propounded in the paper, which also embraces some other points relating purely to survey matters.

6. I may observe that under the Bombay Settlement the guarantee for 30 years will be given for all dry land and for wet land already receiving a full supply of water, but that it will not be given where water is furnished hereafter by Government to land, previously either wholly dry or only partially irrigated. This provision effectually secures the interests of Government.

7. I may remark also that in all cases of land under tanks, the Survey Department undertake to furnish a "water register" for the information of

the District Officer. It was not however considered advisable to show a water rate separately in the pattas given to raiyats, because were such an entry made, they would on any failure of rain infallibly demand a remission in consequence.

8. In reference to para 51, I have the honor to state that the Superintendent of Channels already exercises certain powers, shown in the accompanying copy of Rules for the Conservancy of River Channels.

9. As regards the liability of Inamdars, I consider that it will be advisable to make them pay 1 anna in the rupee, either on the survey assessment should this have been defined, or on the recorded value of the Inam, if not yet defined.

I have the honor to be, &c.,

(Signed) L. BOWRING,
Commissioner.

NOTES OF PROCEEDINGS OF COMMITTEE ASSEMBLED AT BANGALORE FROM 17TH TO 22ND MARCH 1868.

Accounts.

The Committee approved of the forms of accounts for village Shanbhogs, and the Commissioner directed that they should be forwarded with a Circular to Superintendents, with a view to those Officers expressing an opinion which of them, either in abstract or detail, might be given in by Shanbhogs to Amildars, and by the latter to the District Officers. On the receipt of Superintendents' replies, it will be easy to determine what accounts may with advantage be forwarded through the Superintendents to the Commissioner's Office.*

Survey Rates.

Local Funds.

The Committee examined the survey papers, and having received from Major Prescott an explanation of the principles on which his survey rates are fixed, observed that the rates both in respect to irrigated and unirrigated land, appear to fall at $\frac{1}{6}$th of the gross produce, as an average. It being established that such proportion is very favorable towards the cultivators, the Committee were of opinion, that with a view to raising funds for local purposes, there can be no possible objection to levying from the raiyats, in addition to the number, assessment, one anna in the rupee, the amount so raised to be devoted to repairs of roads (in lieu of the old Plough Tax), repairs of tanks, educational fund, and such other purposes as may be determined by competent authority.

An additional anna in the rupee will be payable from all irrigated land, and the amount thus realized will be devoted solely to the repairs of tanks.

The above payments are payable, in the case of all settled taluks, from the the year in which the settlement was introduced.

Remuneration of Village Servants.

The Committee were of opinion that it is not advisable for the Government to undertake the payment of the emoluments of any village servants, except Shanbhogs and Patels and it was determined that the Survey and Settlement Department should dispose of all such allowances, it being left to the Inam Commissioner to examine, and decide all cases of emoluments of other village servants of every description. The exact amount to be paid as percentage or otherwise to the Shanbhogs and Patels, was not settled, but it was observed that probably the amount to be defrayed by Government, in lieu of all previous allowances, might be, in the case of Shanbhogs, 5 per cent on the collections in addition to service land now held by them, on the latter of which a suitable jodi might be placed, and in the case

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* The register of tanks will be one of the forms to be forwarded yearly by Shanbhogs to Amildars, and by these officers to Deputy Superintendents.

of Patels 2 per cent or 7 per cent in all. In the meantime an ad-interim settlement is being carried on by Major Prescott, the Survey Commissioner.

Wargs of Nagar.

It was decided that an inspection of the wargs should be made, both by the Forest and by the Survey Department, to determine whether a revision of the assessment and consequent detailed survey is necessary, as also whether it will be to the interest of Government to introduce the survey in the Malnad taluks for its own objects, supposing that the wargdars do not petition that the operations of the Department may be extended to their holdings.

Further extension of Survey.

Operations to be commenced in the Bangalore District after the rains, when the Survey work in the Powgurh Taluk will have been completed.

Co-operation with the Inam Commissioner.

Captain Grant strongly urged the advantage of the enquiry into Inams preceding the survey and settlement parties, and agreed to accept the boundaries of Inam properties which the Inam Commissioner may lay down, on the understanding that a rough sketch taken from at least two fixed points is furnished.

Proposed that the Inam Commissioner should commence operations in unsurveyed taluks, leaving the settled taluks to be taken up by one of his Assistants.

Colonel Strachey's Memorandum on the Revenue Survey of Mysore.

The following paragraphs contain the views of the Committee on Colonel Strachey's Memorandum on points calling for attention in the Revenue Survey of Mysore, with reference to the requirements of Irrigation works present and prospective.

Classification of Lands.

The distinction adhered to generally by the Revenue Survey is as follows:—

1. Lands not irrigated.

2. Irrigated from ordinary tanks.

3. Irrigated from tanks fed by rivers.

4. Irrigated from channels derived from rivers. All information regarding the quality of land, and the method of computing water rates according to the value of the irrigation provided, will be put on record in a separate "water register" to be furnished to District Officers. Such details are not furnished in communicating the settlement to the raiyats.

Regulation of Rates.

As rates must vary in each District according to circumstances, ascertainable only by minute enquiry on the spot, their regulation should be left entirely to the Survey Department, it being understood with regard to the water-cess, that as it is fixed after due allowance has been made for the annual fluctuations of rain-fall and supply of water, no remissions are claimable on account of such variations.

Division of Irrigation works into Classes.

Irrigation works to be divided into 1st class and 2nd class.

1st Class.

The 1st class to comprise main channels from rivers, and all tanks below which 50 acres and upwards are cultivated. It was also suggested that 1st class tanks should be determined by fixing a money limit in respect of revenue, say Rs. 1,000 and upwards so as to restrict the number of such works to about 100 for the whole Province.

2nd Class.

2nd class works to comprise all other tanks, and under certain circumstances, subsidiary Irrigation channels also.

Definition of terms to be employed in dealing with Irrigation Works.

It being considered necessary to fix a precise meaning for * the terms employed in dealing with irrigation works, the following definitions were agreed upon :—

A.
Re-construction and restoration.

Creating a fresh the means of rrigation after the total destruction of a work, or its abandonment for 5 years and upwards.

B.
Improvement and Extraordinary Repairs.

Providing increased means of irrigation.

C.
Maintenance and Ordinary Repairs.

Keeping up to a fixed standard, or preventing deterioration.

Under A.

2nd Class works under A, that is, original works up to Rs. 500, may be carried out on the sole responsibility of Revenue Officers. More expensive projects of either class to be investigated and prepared by the Public Works Department, and be carried out by the agency determined upon when passing the estimate.

Under B.

Works under B, to be dealt with on a similar system.

Under C.

Works under C, (when the tanks or subsidiary channels are 2nd class) to be executed by the raiyats, as provided for in the following paragraphs :—

Mode of dealing with 1st Class Works.

The re-construction, improvement, and maintenance of 1st class works, to be entirely in the hands of Government in the Public Works Department.

Mode of dealing with 2nd Class Works. Restoration and Improvement.

It was resolved that if raiyats provide the whole cost or labor of restoring or improving a work, they shall be entitled to a remission of $\frac{1}{4}$ of the survey rates on irrigated lands under such work, from the date of restoration or improvement, till the expiry of the settlement. The same proportion of remission, that is $\frac{1}{4}$th, to be continued at the next revision of assessment.

The case of a raiyat restoring a small tank or "gunté" within his survey number, was provided for by ruling that, till the end of the existing settlement, dry rates only should be imposed, and afterwards $\frac{1}{2}$ water rates.

The Committee decided that no remission should be granted to raiyats when Government bears any share of the cost. The contribution of the raiyats, whether in labor or money, should in such cases never amount to less than $\frac{1}{4}$ of the whole expenditure, and as a general rule $\frac{1}{2}$ or $\frac{1}{3}$, as may be determined on by the Deputy Superintendent, according to the circumstances of the cultivators.

Further, that great care should be taken in determining, upon the report of a competent officer, what works should be entrusted on the above terms to raiyats.

Also that no contractor or outsider shall be admitted, at least until after the introduction of the revenue settlement, and that Circular 227 of 31st March 1863, should be withdrawn.

Maintenance of 2nd Class Works.

The expediency of transferring to raiyats the obligation to maintain the numerous small tanks which exist in Mysore, and the subsidiary works under channels, was fully recognized by the Committee. In the case of tanks not in thorough order, it was proposed that their existing actual condition should, for the present, be considered the standard up to which they should be kept, but the mode of gauging and recording their present state was not accurately defined.

* The terms "Original" and "Repair" are now in use. They are arbitrary as used, for if a repair costs more than $\frac{1}{4}$ of the value of a tank (i. e. $\frac{1}{4}$ of 20 years' revenue) or more than 5 years' revenue, it is classed as an original work. It was observed that this method requires re-consideration in connection with the foregoing rulings.

The Committee was opposed to making any deduction from the assessment on account of the maintenance of 2nd class works, and there was a disposition to insist that raiyats should be compelled to undertake this duty, that there should be no option, and no alternative stepping in of Government to make good defects. In fact that no failure on the part of the raiyats should be allowed. This course it was argued, is equally for the benefit of the raiyats and of Government, for experience has shown that no other agency than that of the cultivators on the spot, can cope with the difficulties of maintaining every petty irrigation work throughout the land.

Guarantee to raiyats and preservation of Government interests

It was observed that under all tanks and channels, there are three descriptions of land: A, fully or sufficiently irrigated; B, insufficiently irrigated, or with an uncertain supply of water (called "Bengar" in Mysore); C, dry land capable of being irrigated.

The Survey Department will guarantee the revised assessment to the holders of A, till the end of the settlement.

They will guarantee to the holders of B, that their rates will not be increased, unless, by improved irrigation provided by Government, their lands are brought up to the standard of A, or to any intermediate but well defined higher rate of irrigation, to be decided by the Survey Department on a reference from the District Officer.

Dry rates will be guaranteed to the holders of C, but if their land becomes irrigated, water rates will be imposed according to the class of irrigation provided.

Opinions were for some time divided as to the expediency of withholding an absolute guarantee for the full term of the settlement from the occupiers of B. The argument on one side was, that it would be difficult to determine when the assessment should be increased, and that the profit to Government would be small compared with the discontent which the unfair proceedings of subordinate officials might produce. This to some extent was conceded, but it was not thought impossible to avoid the mischief, with the aid of information to be left on record by the Survey Department, and subsequent actual inspection of the land. It was eventually determined that the increased means of irrigation should always be fully apparent, and that in such cases it would be unjust to the holders of A, as well as a serious loss to Government, if land B, were continued, perhaps for 20 years and more, at a low assessment, although receiving as much water as A.

In respect to para 24 of Colonel Strachey's Memorandum, which runs as follows:— "After an improvement, the actual extension of irrigation might be tested for, say 3 "years, and on the results so obtained, a new settlement made to continue to the "end of the existing general settlement, or for any shorter period thought proper." It was decided that all such cases should be referred to the Survey Department for disposal.

Regulation of supply of water from channels and large tanks.

Government has the right to deny water to holders of land under channels, in cases where water is wasted upon narrow strips of cultivation, to the detriment of broader tracts which might otherwise be irrigated.

All river channels which may be used for direct irrigation, with their head works, and all accessories, also all 1st class tanks, should be entirely under the control of the Irrigation Department of Public Works.

The position and liability of Inamdars.

To be determined in communication with the Inam Commissioner.

APPENDIX.

EXPLANATION.

Under the classification of irrigation works, in the above, it is stated that the re-construction or restoration of tanks up to Rs. 500, may be carried out on the "sole responsibility" of the revenue officers.

2. Theoretically, under the Code, the Chief Engineer has been held finally responsible before Government, for all such work; as also for repairs in every shape: but practically, as he has had no adequate establishment, for either testing the correctness of the estimates, or examining works of this class, under Rs. 500, carried out by civil officers, he could not, correctly speaking, be held responsible.

3. My desire is therefore that, until the action of the proposed Irrigation Department be extended to the tank system, the Chief Engineer be relieved of the above responsibility; and, to do this effectually, that the funds to meet such work be provided in the civil Budget, in the same way as laid down for minor civil buildings in Public Works Department Circular No. 1 of 1866.

4. The procedure hitherto in regard to channels, has been pretty much the same as in reference to tanks; but it appears to me very inexpedient that this state of things should continue, and that the sooner all such work is brought under professional check, the better. The Chief Engineer should therefore be still held responsible for all work both under original and repairs, on the channels, or what would be better, that the Irrigation Department be formed without delay, and undertake the work.

5. Even in regard to the tank system, while compelled from necessity to propose the above arrangement, from the totally inadequate strength of this department, I must still hold, that it would prove infinitely to the advantage of both the people and Government, if the tanks were taken up also by the Irrigation Department. Everything hitherto done in this matter by either Native Governments, or our own, has, as I have shewn, in several communications, been simply on the hand-to-mouth system, and devoid of all plan on a recognized scientific basis.

BANGALORE,
25th March 1868.

(Sd.) R. H. SANKEY, MAJOR, R. E.,
Chief Engineer.

General. 3074 / Irrigation. 80 } 1868-69.

MYSORE COMMISSIONER'S OFFICE,
Dated, Bangalore, 24th August 1868.

From

THE COMMISSIONER FOR THE GOVERNMENT
OF THE TERRITORIES OF HIS HIGHNESS
THE MAHARAJA OF MYSORE.

To

THE SECRETARY TO THE GOVERNMENT OF INDIA,
PUBLIC WORKS DEPARTMENT,
WITH THE GOVERNOR GENERAL,
Head Quarters, Simla.

SIR,

I replying to your letter 103 A. I, dated the 29th ultimo, I feel myself obliged to travel again over much of the ground followed in my letters marginally noted, but the subject of tank repairs in Mysore is of such great moment to the interests of the people and the future prosperity of the Province, that, however reluctantly I am obliged to trespass at some length on the attention of His Excellency the Viceroy and Governor General in Council.

Letter No.	6689/153,	dated	27th February	1868, to	Govt.,	P. W. D.
"	108/13	"	15th April	"	"	F. D.
"	861/39	"	13th May	"	"	F. D.
"	2030/89	"	7th July	"	"	F. D.
"	1103/31	"	26th May	"	"	P. W. D.

2. In my letter No. 6689—153, dated the 27th February, I endeavoured to shew that the question at issue is not so much one of constructing new works not hitherto contemplated, as of maintaining and keeping in repair those which have long been in existence, and that if it were possible to secure the end in view by purely Native agency available in the Province, it would be inexpedient to introduce an extraneous machinery foreign to the country and not enjoying the confidence of the people. I contended further that the probable restoration of Mysore to a Native ruler within a limited term of years made it essential not to constitute an establishment which would be liable to sudden dislocation on the young Prince's attaining his majority, and that although for major works requiring professional skill in their supervision, it might be desirable to retain a special department acting under the general directions of the Resident, it was expedient to surrender to the revenue officers the control over the numerous minor irrigation works of the country.

3. A certain amount of science is of course necessary in repairing all irrigation works, but the same might be said of every handicraft and occupation, and therefore what we have to consider practically is,—whether the Revenue officers and the people of the country are competent to carry out the desired repairs. This I have little hesitation in asserting that they can do, but it is of the utmost importance that the technicalities of preparing plans and estimates, of submitting accounts in set forms, and of drawing up completion statements, should not, however useful in themselves, be so rigidly enforced as to dishearten the Revenue officers, and throw obstacles in the way of carrying out actual work. I do not for a moment advocate giving money for expenditure, and exercising no check or control on the part of the Government; but I believe that without disparagement, a more simple process than that now in force may with advantage be followed, nay more, that it is imperative, if the Supreme Government desire to introduce a system acceptable to the people and adopted to the requirements of the future.

4. Considering the vast number of irrigation works in the province, the trifling character of the minor ones, and the evident impossibility of the Government assuming the responsibility of keeping them all in repair, the first requisite undoubtedly is to prescribe such a mode of action as will command the sympathies and co-operation of the raiyats. In former days, when the Government, by the direct agency of its own officers, or indirectly through the Patels, enforced certain obligations on the part of the cultivators, compulsory labor was largely employed in repairing tanks. It is neither desirable nor possible to revive this system; but on the other hand it is not expedient that the Government should, unaided, guarantee the up-keep of all existing tanks. It has neither the money nor the command of labor sufficient to enable it to do this. The results of past years seem to me most discouraging; and I do not think I am wrong in saying that five tanks are breached for one that is repaired, and the total number breached or out of order in the province is perhaps not less than 3,000 or 4,000 or a quarter of the whole, counting great and small works.

5. It must be remembered that though one heavy fall of rain is enough in many cases to destroy a tank, years often elapse before it is repaired. An elaborate estimate has to be made out at the convenience of a suveyor, who has many such works to attend to; and when prepared it has to be tested by the Executive Engineer, and then submitted for criticism and sanction. All this takes time, and if haply, it is commenced, but not finished before the 31st of March, the end of the official year, the sanction is cancelled. and a fresh estimate has to be submitted for the same work. The grant lapses, and the new estimate is demanded in the height of the working season,—for it must not be forgotten that the official year as now fixed, though convenient for purposes of account, does not correspond with the working season, which extends to the end of May, that is, the beginning of the monsoon

6. In the next place, the completion report is a great difficulty. A subordinate of the Public Works Department, if the Executive Engineer cannot spare the time, has to prepare a statement of work done: but it frequently happens that important duties call him away in another direction, and the examination is deferred till the tank is filled and no reliable report regarding the execution of a work can then be drawn up. The completion report is necessary for audit purposes, but is practically of little other use, and where the work has been wholly or partially carried out by the raiyats themselves, is difficult of preparation.

7. The accounts to be rendered are not in my opinion difficult of comprehension, every care having been taken to make them as few and as simple as possible; but I must admit that the success attained by the Revenue officials in mastering them and adhering to them, has been far less than might reasonably have been expected.

8. It will no doubt be allowed by all those who are interested in the question, that no system can really be sound which does not command the active support of the cultivators themselves, and as the Government can no longer resort to the use of compulsory labor, and is powerless to grapple efficiently itself with the many thousand irrigation works of the province, I believe it is of the utmost importance to secure the direct co-operation of the villagers. This can only be done by giving them a share in the work and appealing to their self-interest for its preservation. A grant-in-aid has this advantage, that while it effects a saving to Government, it makes the cultivator rely upon his own exertions, instead of looking listlessly on and calling out for State interference, while at the same time his direct interest in the prosecution of the work and its ulterior preservation induce him to see that it is substantially carried out. The exact amount to be contributed, either in labor or money, must be decided by the District officer, who may also determine whether any remission of a part of the assessment is expedient as an inducement to the raiyat to aid largely in the construction of the work. When the whole of the repair is carried out by the villagers, it was proposed to give a permanent remission of $\frac{1}{4}$ of the assessed irrigated rate on condition that the up-keep is maintained. This principle appears sound, and may be further extended at the discretion of the Deputy Superintendent, it being more to the advantage of Government to spend some money and secure $\frac{2}{3}$rds or $\frac{3}{4}$ths of the enhanced rate, than to restrict its expen-

diture and realize only dry rates or nothing at all even, should the land lie fallow, which is often the case where dry crops cannot be successfully grown under breached tanks.

9. When the raiyat's contribution is in money, there is of course no difficulty whatever in deducting it from the amount to be sanctioned: when it bears a fixed proportion of the estimate in the shape of actual labor, it is expected that an inspection of the quantity of work done will enable the officer entrusted with the duty, to determine whether the raiyat's share has been fully carried out.

10. Subsidiary to the question of repairs by cultivators is that of admitting outsiders to effect the restoration of breached tanks, on which point there is some difference of opinion. It was the practice formerly, when tenders were accepted from such persons, to exact from the raiyats a relinquishment of their land by a razinama, and it was understood that if they afterwards made arrangements with the repairer to remain as cultivators, they were bound to pay him in kind by giving him half the produce. This custom no doubt led to the restoration of many tanks, and was profitable to the contractor, but I have reason to think that the rights of the cultivators were not sedulously preserved, and that by fraud or intimidation they were often cajoled out of their occupancy. Disputes were frequent between those who remained on the land and the contractor, and in some cases it has been found necessary to substitute a money assessment, giving the contractor only the difference between dry and wet rates, or between lower or higher wet rates, a proceeding which, though rendered imperative by circumstances, was highly distasteful to the contractor, who found the interest on his expended capital reduced to a minimum. Looking to the long leases of 30 years given by the Survey Department, it appears inadvisable to admit outsiders at present, except in the case of surveyed and assessed taluks.

11. In addition to the two systems of repairing tanks by Government agency, or by raiyats and private individuals, there is a third, called "Kodagi" according to which a portion of the land under a tank is given to an individual on a light quit-rent, on condition that he keeps the tank in repair. Although in some instances the ancestor of the present inamdar may have formed or re-constructed the tank at his own expense, such cases being entitled to special consideration, it is a well known fact that everywhere in the province the obligations of the kodagidars have been shamefully neglected. It may be assumed that the kodagi inams were originally given *bonâ fide* for the purpose of tank repairs, owing to former Governments being unable or unwilling to undertake the duty themselves, but it is an undoubted fact that the land has passed from one person to another, frequently into the hands of influential and non-resident officials, and that the duties for which it was assigned are almost universally ignored. It has been proposed to resume all such lands, and either to leave them in the hands of the existing inamdars on an equitable quit-rent in acknowledgement of long possession, or to assess them fully, and to apply the difference between the old quit-rent and the full assessment to the tank fund. The subject is now under the consideration of the Inam Commissioner.

12. Having discussed in the previous paragraphs the advantages of leaving in the hands of the Revenue officers the minor irrigation works of the country, and of enlisting the co-operation of the cultivators in effecting necessary repairs, I pass on to the question whether, if this elimination from he control of the professional officers is carried out, it is necessary or expedient to follow the present system as regards estimates, accounts, and completion reports, or whether it would not be preferable to substitute a more simple procedure in consonance with previous usage. On this subject, I have the honor to submit copy of a memorandum prepared by the Deputy Superintendent of Kolar, who has been signally successful in effecting repairs of tanks in his district by the agency of the raiyats. His remarks must be accepted with some reservation, but they are interesting as indicating the views of the leading native officials, and in many respects are deserving of serious consideration.

13. I should recommend myself, in the first place, following the course suggested in paras 335, 336 of my Administration Report for 1865-66, which I here quote for easy reference.

"335. As regards ordinary tank repairs, it is, I consider, desirable in the "interests of the country, that the existing system introduced in 1856, should be "modified so as to give the civil officers greater scope of action in regards to "such works. The accounts now rendered by them to the Comptroller under "the rules for minor works, are sufficient for all purposes of check and audit: "but it appears to me very desirable that the money available yearly for irriga-"tion repairs should be more absolutely at the disposal of the civil officers, and "that the responsibility of the Public Works Department should be limited to "professional advice when called for. It is also necessary that a larger sum "should be devoted yearly to irrigation repairs, and with this object I would "propose to fund the available surplus of the year 1865-66, say 4 lakhs, as "also that of future years, the amount thus at credit being held in deposit for "the sole purpose of tank repairs to be executed by the civil officers. The sys-"tem on which I would suggest its expenditure is, that the outlay on a tank "should be a Government contribution in aid of the raiyats, who, according to "the old custom of the country, were bound to furnish labor for extraordinary "repairs, the Government supplying the materials and supervision. Of late "years, the raiyats have silently ignored their obligations, and the whole duty "and cost of repairing tanks both in regard to the requisite labor and material, "have fallen on Government, so that, with rising prices and rates, the sum "available for tank repairs bears no proportion to what it did in former days. "I propose that out of the sum placed at the disposal of each Deputy Superin-"tendent, yearly contributions be given by the Government for the repairs of "such tanks as the district officer considers most in need of attention, the "aid to be in the proportion of $\frac{2}{3}$ or $\frac{3}{4}$ according to the exigencies of the case, "and the comparative prosperity of the raiyats. Such a system, while sure "to be ultimately productive to Government, would initiate to a limited extent "a return to the ancient custom of enforcing the raiyat's obligations. Indeed "I am of opinion that while the Government have a right to demand from "them their quota for repairs having regard to the circumstance that we are "giving them 30 years' leases, there will be a positive dearth of money under the "present system, which must end in failure and the destruction of a great num-"ber of tanks. It has also been proposed to impose 2 annas in the rupee on "the raiyat for the purpose of establishing a tank fund; but as the tendency of "this measure would be to take the control over the expenditure out of the hands "of the District officer, and to give rise to importunate demands from the raiyats "of every village where there happend to be a breached tank, I think the plan "suggested by me is preferable. Major Wilks, writing in 1804, says that 'the "average expenses of tanks ought not to be taken at less than 1,25,000 pagodas, "or Rs. 3,75,000.' We now give Rs. 2,00,000 for agricultural repairs, and even "of this sum, a considerable amount is devoted to the rapairs of irrigation "channels. The sum, ought, in my opinion, to be doubled. As an instance of "the existing state of the tanks, I may mention that the Chitaldroog Deputy "Superintendent sent in this year a list of tanks requiring repair, the proposed "outlay on which aggregated 50,000, a sum which, according to the budget "allotment, it is impossible to provide for a single District. The returns for the "repairs of tanks being not only prospectively great, but if a proper selection "is made and the work well done, repaying the outlay from 5 to 10 years, it is "certainly advantageous for the Government to provide money, to the extent "of the available labor, for the purpose. The tank registers, which have been "formed in each taluk, enable the District officer to make a careful selection, "there being naturally many tanks which, owing either to natural features or "the great expense attendant on the work, it would not be profitable to repair. "To remove, for instance, the silt from the bed of a tank, is an operation which "is many times more costly than raising the bund a few feet and the escape a "few inches, but it frequently happens that the nature of the country does not "admit of the latter being done, while the former operation would entail too "large an expenditure to be remunerative. Under the rules for the execution "of works by Civil officers, the Commissioner sanctions all estimates from Rs. "500 to 10,000; the Superintendents from 200 to 500; and the Deputy Super-

"intendents all up to 200. Assuming 4 lakhs as the basis of expenditure, the "details might be regulated as follows, preserving the same rule of sanctions.

Commissioner ...	...	...	1,50,000	
Superintendent, Nundydroog	...	30,000		
Deputy „ Bangalore	...	20,000		
Do „ Tumkur	...	20,000		
Do „ Kolar	...	20,000	90,000	
Superintendent, Ashtagram	...	*50,000		*Including Irrigation channels.
Deputy „ Mysore	...	20,000		
Do „ Hassan	...	20,000	90,000	
Superintendent, Nagar	...	30,000		
Deputy „ Chitaldroog	...	20,000		
Do „ Kadur	...	10,000 ‡	70,000	‡Few tanks.
Do „ Shimoga	...	10,000 ‡		
			4,00,000	

"336. I am not prepared to say that the civil officers would in the first year "be able to work up to 4 lakhs, but there is a marked improvement in the manner "in which the repairs of tanks and the accounts relating to them are disposed of, so "that the principle advocated by me would remain intact, whether greater or less "latitute of action were given in the first year or two. The funding of a sum of "money for the special purpose of repairing tanks, would also be unaffected by the "subsidiary proposal that the raiyats should contribute their quota of the repairs. "That a sum should be set apart for the object indicated, and that it should not be "liable to be re-appropriated for other purposes, is the key of the suggestion I have "made, and as the real prosperity of the country depends much more upon the "substantial condition of these numerous minor works, than upon the prosecution of "costly and difficult engineering projects which entail great delay in execution and "give rise often to professional contentions, I think that a fair trial should be given "to the proposal."

14. It appears to me highly desirable that the Commissioner should apportion yearly to each Superintendent and Deputy Superintendent, the sum available for their respective charges, including what is required for unfinished works. This apportionment now rests with the Chief Engineer, because the amount comes out of the Public Works Department, but I think it should be separately provided as in the case of Budget entry 26, *viz.*, "Minor Repairs by Civil officers." Again, I consider that the audit of the bills should similary be vested in the Revenue Department of the Commissioner's office instead of in that of the Controller, who is of course obliged to adhere to departmental rules in examining and passing the bills. It may perhaps be urged that a less vigilant control and check would thus be exercised, but I doubt this, it being well known that Native Accountants are adepts in examining accounts, and I see no reason why the Huzur Daftar should not do again what it always did prior to 1856. The bills having been scrutinized in the Daftar would be passed on for audit to the Account Department. This course would be entirely in accordance with native ideas, and could be controlled with equal facility by European or Native agency, when the time comes for handing over the Province to the young Raja.

15. I do not propose any alteration at present in the existing powers of sanction of the several officers of the commission, which are now as follows:—Deputy Superintendents sanction all estimates up to 200; Superintendents from 200 to 500; and the Commissioner from 500 to 10,000; but I advocate giving the Amildars powers of sanction up to 100 for emergent works, subject to confirmation by the Deputy Superintendent; and in order to keep them always in funds for incomplete works, it is desirable to allow a sanction once accorded, to hold good till the work is finished, in lieu of the present system. At the same time, all estimates for works exceeding Rs. 500 should be transmitted for examination to the Executive Engineers, or the Engineers of the Irrigation Department when formed, and after they have approved them, be forwarded for sanction to superior authority.

16. Having in my letter No. 6689—153, dated 27th February 1868, submitted my views regarding the constitution of the Public Works Department, I need not

here dilate on the subject, and need only add that for purposes of general supervision, and for laying down practical rules for the repairs of tanks, the best results may be expected from a properly organized Irrigation Department, which while carrying out personally new and important projects, would be able to render valuable aid and suggestions to the revenue officers in executing the repairs of minor works.

17. In connection with the general question, I have the honor also to enclose copy of a memorandum by Major J. Puckle, Cantonment Magistrate, who was for several years an Executive Engineer of this Province, and who has had extensive opportunities of watching the working of the present system of repairing tanks.

I have the honor to be,
Sir,
Your most obedient Servant,
(Signed) L. BOWRING,
Commissioner of Mysore.

MEMORANDUM

By Mr. B. Krishnaiengar, Deputy Superintendent.

Mysore is an exceptional Province in the great number of tanks it possesses. They are mostly small ones requiring no engineering skill to be looked after. In fact villagers used to manage the up-keep of these small tanks as long as the gowd-gootiga system of renting out the whole villages to gowdas, or headmen of the village was in existence, when the gowdas with the help of all the raiyats of their respective villages kept them in repair, as it was their interest to do so, in order to raise the revenue above the amount of their contract and benefit themselves.

They lost all this interest since the raiyatwari system has been introduced instead of renting out the whole village, and many of those small tanks have gradually fallen in disorder—the Government being as unable as unwilling to undertake their repair without the help of the raiyats, owing to the vast number of such tanks being scattered over all parts of the country and their insignificant and unremunerative character, the village headmen having lost all their influence over their raiyats to keep them in order, and the raiyats not caring much, as they did not derive any benefit under the *battayi system.

The result was less cultivation of the wet crops; but this does not seem to have attracted the attention of Government as the revenue was increasing, owing to the high price of provisions and the competition system of selling the Government share of grain, which the raiyats were made to pay instead of money for all wet lands irrigated by Government tanks and channels. Thus these small tanks, upon which great part of this country depends for irrigation, have been neglected, though no doubt every attention was paid to large works which were carefully looked after by the civil officers till the creation of the Public Works Department, when the management of the whole of the works was entirely transferred to them; but as they found it impossible to manage them, a portion of the works are now left to be carried out by the civil officers,—the Public Works Department undertaking the repair of some of the larger ones; but even this change which has been tried for the last six years does not seem to answer the purpose.

It is not because the civil officers are not equal to these duties. They have under them subordinate officials in every corner of the country available to superintend the work, the headmen of the villages ready to help them with prospects of their being once more restored to their former influential position, which they lost in the times of Dewan Purnaiya, who confiscated the little bits of lands attached to their hereditary offices and thus impaired the efficiency of this most important and useful institution; and the raiyats are anxious and willing to co-operate with the Government in the repair of their tanks being now allowed to pay a fixed sum of money instead of equal share of grain for lands cultivated by them, and enjoy the full fruits of their labor and capital, and encouraged by the grant-in-aid system so beneficially introduced by the present Commissioner.

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* Government and the raiyats dividing the produce in equal shares, the latter bearing all the cost and labor of cultivation.

The civil officers are fully capable of doing the needful with so many advantages which the Public Works Department can never hope to have, but as they are not allowed free action and have to depend upon the Public Works Department for sanction of estimates for all works costing above Rs. 500, supply of funds and the adjustment of accounts, they cannot get on as well as they wish. The Public Works Department naturally insist on a close adherence to their Code, but the subordinate revenue officers cannot master the details of codal rules, although they turn out better and more substantial works.

The Public Works Department not liking the idea that this most important branch of the work, for which their department was organized in Mysore, could be carried on by the revenue officers advantageously to the State and satisfactorily to the raiyats without their professional aid, which is so dearly paid for, try to find innumerable faults, trivial though they be, with the work of the Revenue Department. Hence bitterness and antagonism exist between these two departments, and the revenue officers finding their efforts on behalf of Government interests put down by those over whom they cannot exercise anything like the control to which they are subjected, are greatly discouraged in this branch of their duties. The estimates framed by the Revenue Department are returned by the Public Works Department for every little non-conformity to codal rules. They call for plans, sections, levels, &c., and thus the estimates are sent backwards and forwards, and a long time elapses before any work is sanctioned. When it is sanctioned, it must be completed within the official year, otherwise the money lapses and fresh estimates must be submitted for incomplete works.

In most parts of the Province, raiyats are the only coolies available for tank repairs, and they are at leisure from April to June, when they have not to attend to their cultivation; but this most valuable time is allowed to pass away in squaring the past year's accounts, preparing fresh estimates for incomplete works, and making allotment of funds, without which the work cannot go on, and after all, Government is a loser into the bargain. Even if after all this trouble the civil officer manages to get his work done, he has to look forward to the completion certificates that must be given by the Executive Engineer. These are prepared generally upon measurements taken by subordinates of the Public Works Department, and as they do not always tally with the estimates and the exact quantity of work reported by civil officers to have been executed, a long and sometimes unpleasant correspondence ensues between the civil officers and the Controller, Public Works Accounts. To these causes is attributable the Chief Engineer's sweeping remark that the estimates, accounts and completion reports of works executed under civil officers are imperfect and unreliable, and I have no doubt that if the Chief Engineer will be pleased to have some of the works executed in the country under the Public Works Department examined by an officer other than that under whose superintendence they were done and upon whose certificates alone the accounts of his works are passed, it will be found that the completion reports of these works too are less reliable, and that the estimate, plan and sanctions are not adhered to.

If the completion reports even in regard to works performed by the Public Works Department can be proved not always to be relied upon, such documents given for work executed by civil officers are not of much value, but only cause vain trouble and labor. The existence of this state of things is not for the advantage of Government. Divided responsibility is always bad enough, but when coupled with the fact of the doings of one department being subject to the adverse criticism of another rival department, things cannot long go on harmoniously.

Two alternatives are therefore open to remedy the above evils. Either the Public Works Department should be enlarged and the whole of the works undertaken by them, or all repairs of tank works in Mysore be left to the Revenue Department. The former course does not appar to be practicable, as it will be such a heavy drain upon the finances. It is to be doubted that even if such increase of expenditure be incurred on account of establishment, the desired object can be gained. It would be impossible for the Public Works Department to carry out the works unless full and sufficient funds are placed at their disposal. The number of tanks in Mysore is so great that the finances will not admit of their being kept in repair fully at the Government expense without the aid of the raiyats, and this aid the Public Works Department can never expect to get. Further, the sudden breach of

tanks, numbering say about *500 a year, all at the same season, require prompt measures to put them in order, so that the cultivation may not suffer and the Government may not lose the revenue. This the Public Works Department can never accomplish with all their increased establishment and large funds at their command, because the circuitous method prescribed in the Code necessitates the preparation of elaborate estimates, plans and sections, before the whole of which are prepared and sanctioned, the favorable season for cultivation passes away.

Above all it is to be considered whether it is advisable to augment the already overgrown Public Works Department, if the country is ultimately to be ruled by a native Prince. While the Public Works Department have so many difficulties and disadvantages to encounter for undertaking the up-keep of those tanks, the civil officers, it must be admitted, have on the other hand every facility and advantage, and they can carry on these works more promptly, with less establishment, less expensively, and in proper time; for they have all the raiyats at their command, and they can exercise sufficient influence over them so that the majority of the works may be carried on by only giving a grant-in-aid. But the Code must be relaxed, and the system of the preparation of accounts, auditing them, and drawing funds, must be simplified. I think it would be sufficient, if, in preparing estimates, the present defects of the tank, the nature and quantity of work to be executed, the rates and the charge, and the present and probable increase of revenue, are specified. The engineering technicalities, such as the number of cubic yards of water the tank is capable of containing, the square miles of drainage which supplies water to it, the inches of annual rain-fall, the quantity allowed for absorption and evaporation, the balance of cubic yards of water that will be left for cultivation, the cubic feet the waste weir is capable of discharging per second, &c., may be dispensed with. These particulars, in my humble opinion, are not furnished correctly even in the estimates prepared by professional men in the Public Works Department. They are all mere forms and entered on conjecture. The submission of plans and sections should not be insisted on for works to be carried on by the civil officers. They only look well on paper and that is all. Besides delaying the work, it cannot be of much use when so many small tanks are to be repaired for which less scientific but more practical measures are needed.

The Budget of works to be carried on by civil officers should be quite distinct from that of the Public Works Department. The cess of one anna in the rupee leviable from raiyats holding wet lands irrigated by Government water, together with a grant of say 10† per cent of the wet land revenue to be made by Government, will afford ample funds for all tank repairs under civil officers. These funds should not be allowed to lapse at the end of the year, but should go on accumulating for this special purpose, and the funds of each district should only be appropriated for the benefit of that particular district. This plan will not only always ensure permanent funds for the works, but will also obviate the necessity of re-submitting estimates for incomplete works at the end of the year, and other inconveniences above described. I am certain that if funds are set apart as above suggested, there will be sufficient money for the repair of all the tanks in the country gradually. I will endeavour to show this as regards this district, though I have no materials to show it as regards the whole Province.

The lowest estimated amount of revenue which can be realized in this district from wet lands is 3 lakhs of rupees a year.

		Rs.
The amount of cess payable at the rate of one anna in the rupee on the 3 lakhs amounts to		19,500
Grant by Government at 10 per cent on the above		30,000
	Total.....	49,500
Deduct cost of Establishment as per following particulars :—		
1 Mestri at Rs. 35 and 1 Mutsaddi at Rs. 15 per mensem for each of the eleven Taluks of the District	Rs. 6,600	
1 Head Accountant at Rs. 50 per mensem, and 2 Accountants at Rs. 25 each per mensem, and 2 Surveyors at Rs. 75 each per mensem	3,000	9,600
	Balance.....	39,900

*There are upwards of 17,000 tanks in Mysore.

†This I believe is not more than what is now spent on tanks.

This amount of balance, *viz.*, Rs. 39,900 or in round numbers Rs. 40,000 a year, is not only ample to put all the tanks in the district in order gradually, but will also serve for the construction of new works ultimately. I would propose that a distribution of Rs. 33,000 be made to the taluks at the rate of Rs. 3,000 for each taluk, solely for improving the old tanks. The balance of Rs. 7,000 will be reserved for emergencies, such as breach of tanks. The allotment of Rs. 3,000 to each taluk must be systematical, *i. e.*, the whole of the tanks of one hobli of a taluk are to be put in order first, then those of another hobli and so on.

By this means, the whole of the tanks will have been put in order within ten years. This methodical arrangement, if adopted, will ensure the repairs and improvements of all the tanks in the country. It will facilitate supervision, as the Mestri and Mutsaddi will be confined to a particular locality instead of being knocked about from place to place. The Amildar will also turn his attention to that particular hobli, and the Assistant and Deputy Superintendent may conveniently go to the particular point in which the improvement is being carried on, and at the same time visit several tanks undergoing repair. The Superintendent may also inspect some of the large tanks in his annual tour in each district. The Amildar should submit his monthly accounts to, and draw his funds from, the Deputy Superintendent, who should draw the funds directly from his own Treasury within the limits of his Budget allotment. The accounts should be submitted by the Amildar once a month, instead of the present imprest system, which necessitates the frequent submission of accounts, and constant remitting of money in a month. After the works are completed, the accounts, if they do not exceed Rs. 200, are to be audited upon the certificate of the Amildar; if above Rs. 200 and within Rs. 1,000, upon the certificate of the Assistant Superintendent; if above Rs 1,000, upon the certificate of the Deputy Superintendent. The works should be audited in the offices of the different sanctioning authorities, *viz.*, the Deputy Superintendent, the Superintendent and the Commissioner. The power of the first being increased to †Rs. 500, that of the 2nd to †Rs. 1,000, and all above that sum being left to the Commissioner. The whole of the works should be finally audited in the Commissioner's Huzur Daftar or Revenue Department, which, I presume, can easily afford to do it without any inconvenience, it having been relieved of a great portion of the duties of the Account Department.

All works executed under Civil officers should either be executed by Government agency, or should be given out on contract to the headman or principal cultivator of the lands below the tank, and on no account should an outsider be allowed to take the contract of the tank repairs. Such works as would repay the amount expended on them within 5 years, may be undertaken wholly at the Government expense; within 10 years, by the raiyats contributing one-fourth share towards the repairs; within 15 years, by their contributing one-third share; and within 20 years, one-half share. The contribution should either be in money or labor according to the circumstances of the people, at the discretion of the District officers. That the contribution has been actually made can be easily ascertained. If it is in money, there is no difficulty, and if it is to be in labor, the value of the work to be done by raiyats is to be deducted from the total amount of the estimate, and the balance only to be sanctioned by Government. After the completion of the work, the officer who is required to inspect and give the certificate for the work, must examine and ascertain whether work to the full amount of the estimate has been executed or not. This, I consider, is a sufficient check that the contribution has been actually made.

By the grant-in-aid system, three objects can be attained:—1st saving to Government; 2nd the raiytas will watch that the work is properly carried on; and 3rd they will see that it is maintained in good order afterwards. This plan may be followed both in surveyed and unsurveyed taluks, as I see nothing in the Government guarantee which renders it difficult to be carried out in the former taluks. Where raiyats are unable or unwilling to contribute, and the work not sufficiently remunerative for Government to undertake, private persons may be admitted, as it would only tend to the improvement of the country. The Commissioner's Circular Orders of 1863 regard-

*They can manage this with their present establishment.

†This, I believe, the Chief Engineer has already proposed.

ing the restoration of ruined tanks, have already conferred a great boon on the country, upwards of 500 of such tanks having up to this time been restored by the raiyats and others, at an outlay of about Rs. 2,00,000 in this District alone. The effects of this measure cannot be over-rated; while it improved the country, it was the means of bringing to wet cultivation lands which were otherwise incapable of it, or altogether lying waste, afforded labor to the poor raiyats during times of famine, drew to good application hidden wealth of the rich people, and in fact contributed to the prosperity of the country. It has also, on the other hand, added to the revenue of Government without any cost, and relieved it from the necessity of keeping several small tanks in repair. It would therefore seem to be advisable to encourage this system by giving a fair and proper support to the people who lay out their capital, depending upon the State. If the land below the tank repaired be lying waste for a number of years, the full right to it may be made over to the tank repairer, subject to the payment of a fixed rent. But if the land be already in the occupation of the raiyats who are paying the dry rates for it, and who have declined to repair the tank themselves, then the relation between the tank repairer and the raiyats ought to be the same as that between the Government and raiyats as regards battayi cultivation, that is, the raiyats should give a share in the produce, and that so long as they cultivate punctually, they ought not to be ousted. This is not foreign to the old and long established practice of the country, and it does not cause any loss to the raiyat, who by his land being turned from dry into wet cultivation will get more profit in his half share of the wet crop without any assessment, than his full dry crop with the assessment thereon. It being the interest of the tank repairer to derive as much benefit as he possibly can from the lands, he will naturally help the raiyats by providing them with seeds, manure, &c.

In all such cases as above, Government should exact a razinama from all the raiyats, and such a razinama should mean relinquishment of all rights to the land, except that of cultivating it on battayi and giving a share in the produce to the tank repairer. This would be the best arrangement; otherwise there would be no end of complaints from raiyats who could ill-brook an outsider earning the profits of his capital, and the capitalist himself would be discouraged, if not ruined. No man would take up a tank on any other terms, as it would not at all be profitable to him. If he were permitted only to collect the difference between dry and wet rates, or between lower and higher wet rates, it would hardly make up for the interest on his capital, he would not improve the lands which may be considered as belonging to raiyats and would not take that interest in the up-keep of the tank as he otherwise would. The raiyats themselves will have to deal with two land-lords for the same piece of land,—one, the Government to whom they should pay the dry or lower wet rate,—and the other, the tank repairer to whom they should pay the difference between these rates and wet and higher rates, as the case may be. This arrangement will also complicate matters as regards Government too. According to the rules laid down about the repair of these breached tanks by private individuals, the repairer of the tank is entitled to a remission of one-fourth of the consolidated assessment due on the lands irrigated by it. This includes both the land revenue and the water rate, and if the land revenue is to be recovered from the raiyat, and some reduced water rate from the tank repairer, the Government will have to give two pattas to two individuals for the same piece of land. The dispute between the tank repairer and the raiyats will be endless, and thus the object of giving these tanks to private individuals, *viz.*, the improvement of the country, will be a failure. If, on the other hand, the tank repairer is made solely responsible for the full amount of the Government demand on the whole of the lands which the tank can be made capable of irrigating, only after expending the full amount of the estimate, it will not only obviate the above difficulties, but will also act as the best check on the estimated expenditure by him upon the tank.

KOLAR,
16th August 1868.

B. KRISHNAIENGAR,
Deputy Superintendent,
Kolar District.

MEMORANDUM.

By Major J. Puckle.

It cannot be doubted that direct responsibility and close supervision are absolutely necessary in carrying out Public Works economically and well, and exactly in proportion as these essentials are brought to bear upon them, so are they accordingly good or bad.

2. Before the introduction of the Department of Public Works into Mysore, these were carried out by the Superintendents of the old Divisions, whose authority, ramifying throughout their Districts, could be enforced by local agency over every acre of ground.

3. Mysore is irrigated by a system of tanks varying in size from lakes of some square miles in area to others of three or four acres, all originally constructed, and until 1856, kept up by native agency. They are her life blood, and depend for their supply generally on a capricious rain-fall; the average at Bangalore over a series of years being 36 inches annually.

4. With the exception of some of the larger ones in favorable sites across, and those supplied by our smaller rivers, they are all sooner or later, according to capacity, exhausted during the hot weather, even in most favorable seasons, when filled up by the latter rains in November; but the rain-fall is singularly irregular; at one time it descends in genial showers that refresh the cultivation, but barely add to the storage capacity of the tanks; at other times there are suddenly heavy bursts of rain, as exemplified in the margin from very carefully kept records, and again there are long intervals of droughs followed by destructive floods, such as may be imagined when $\frac{1}{3}$ of the annual rain-fall was gauged in 36 hours, and when the Cauvery topped, as it did in July 1859, the road-way of the Wellesley Bridge at Seringapatam.

		Inches.	
Bangalore	14—9—60	... 1·20	in 15 minutes.
Do	2—5—61	... 1·60	in 40 minutes.
Shimoga	21—9—58	... 4·00	during night.

Tumkur, Oct. 1858, when the Hagari topped the road-way of the Hiriyur Bridge; and the Bhadra topped the caps of the piers of the Benkipur Bridge.	12 inches in 36 hours. This also in Bombay in July 1859.

5. To a professional eye, most of the tanks present a rude and apparently unskillful style of construction, but a close examination convinces one that great practical skill has been exercised, and that the Native Engineers worked at any rate by a marvellously accurate rule of thumb, as their works which have stood the test of ages, in spite of the trying physical forces opposed to them, abundantly testify.

6. The requirements of Mysore seem to demand not that all existing tanks should be brought up to departmental standard, which would cost an enormous sum with questionable benefit, but that professional skill should devise plans for spending a similar sum in damming our rivers to feed these tanks in summer, and in the construction of large reservoirs in selected sites, for securing as much as possible of these devastating floods, for the purpose of distributing the empounded water in manageable channels in times of drought; there are numerous sites for such reservoirs, but for want of adequate storage of the quickly escaping water in times of flood, a "golden" supply is lost to Mysore.

7. Contrasting what was done before the introduction into Mysore of the Department of Public Works in 1856 with what has since been done, one cannot fail to see that constructive improvement has taken place in centres of civilization, and in get-at-able places, where professional skill and close supervision have been possible; but in out-of-the-way places, which are legion, all repairs and re-constructions of irrigation works and ordinary buildings, &c., have been carried out by the same class of workmen as before; but from the fact of the Taluk authorities being practically relieved of the responsibility they were formerly bound to exercise, and the organization of the Department of Public Works not admitting their having their eyes everywhere, contractors have, except in rare instances, had it very much their own way.

8. From 1856 to 1861, regarding which I speak with confidence, almost all irrigation repairs and certainly all ordinary civil buildings' expenditure in this Division, were carried out as before in reality, though nominally by the new department, and I have myself placed the Range Mestri under the direct authority and control of an Amildar, feeling convinced that in no other way could direct responsibility and close supervision be ensured.

9. Had the separation in 1856 been less complete, and had an officer been placed at the disposal of each of the Superintendents of the old 4 Divisions to act as his Assistant in the Public Works Department, I believe it would have had an excellent effect, though of course I did not quite think so at that time. He would have worked with all the authority of the Superintendent, systematising and fostering an excellent organization adopted to the then requirements of the country, and with tact, temper, and discretion, would have accomplished far more than would be possible in any other way.

10. In the period of which I speak, though the expenditure in establishments was greatly increased, I am convinced there was not more real work done than in the previous five years. There were more reports, but I reluctantly admit there was more cry than wool.

11. During this period, *viz.*, in September and October 1858, there were disastrous floods after severe drought amounting to threatened famine, in which the old Chitaldroog Division fared the worst. It was melancholy to receive daily reports of breached tanks, 85 out of 147 being so breached in Sira Taluk alone. The department was paralysed, and the Superintendent of the Division had to be asked to act in the emergency: with his usual promptitude Colonel Dobbs brought his own energy, and that of the whole Division to bear upon the work; on the 4th November it was officially reported that temporary measures had been successfully adopted to secure a varying supply of water for the immediate necessity, and on the 10th March 1859, it was also officially reported that the whole of the emergent repairs to large and small works, rendered necessary by the late floods, would be completed before the middle of May, and that if the early rains did not fail, the Superintendent "fully anticipated that the whole of the exceptional expenditure would be covered by that Vaisakh crop."

12. Had this course not been promptly adopted, the loss of revenue would have been very great. It was saved only by the head of the Division holding every taluk and village officer personally responsible for the outlay, and making him co-operate heartily for the general good; the raiyats seeing this gave willing assistance, as it was their interest to do, and probably so much money has never before or since been so cheaply spent in so short a time.

13. It is thus shown that the same agency that constructed these works cannot only look after their efficient up-keep, but is able to grapple with an emergency that the new department confessed itself unable to do. It is not on record, but I know it to be a fact that in addition to this, many a tank was saved from being breached at this time, and notably so, one of the largest in the Division, the Bhimasandra tank (I think, for I am writing from memory). The water was just topping the bund when the Amildar collected every available man, and remained there the greater part of a day and night, turfing every little hole and gully, until they were able at considerable risk to break up part of the cills of the waste weirs to admit of a quicker escape; and it was only to this skilful treatment that the safety of this large reservoir was due. Such services as these were of common occurrence, and did not then appear to demand more than a "reply takid of approval," certainly not a special report in English, which, if graphically written, with an appendix showing the amount of revenue saved to the State, would now cause an expression of the thanks of the Government being given to the officer, who had so skilfully directed the proceedings that secured such valuable results.

14. Since the end of 1863, I have not had the opportunity of getting precise information on the subject, but I believe the same skill is still available; but the contract system which demands such close supervision, and has been so largely introduced, has been unduly forced; and that skilful accountants can

manipulate the present elaborate system of accounts, as easily as they were said manipulate the similar ones of former days; and I am still of opinion, if the plan suggested in para 9 were feasible, with the Chief Engineer as Secretary to the Commissioner in the Department of Public Works, and the similar forms of accounts re-introduced, that the available indigenous talent would be brought forward in the best and most economical manner; that direct responsibility and close supervision would be ensured in the only way possible *at present*, and that greater agricultural progress would be the result.

15. I would at least advocate this plan until the whole of the Province is accurately surveyed by the Revenue Survey Officers, who, if called on, would, from the opportunities they have of personally seeing every tank, be able to furnish a most reliable report of the actual condition and value of each of our very numerous irrigation works; in the meantime, the Chief Engineer with a special department could systematize the communications and devise means for mitigating the disastrous nature of our floods, by directing as much as possible of them into capacious reservoirs for future controllable distribution to our fields.

BANGALORE,
18*th April* 1868.

J. PUCKLE,
Deputy Supdt., Mysore Commission.

No. 143 E. 1.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

ESTABLISHMENT.

IRRIGATION.

Simla, the 31*st August* 1868.

To—The Commissioner of Mysore.

SIR,

I am directed to acknowledge receipt of your letter No. 6689-153, dated the 27th February last, forwarding Chief Engineer's No. 661—63, dated 4th February 1868, in which the general position of the Public Works Department in Mysore is reviewed and proposals made for certain modifications of its arrangements, principally to meet the contingency of the probable restoration of the country to a Native Government, but partly also to strengthen the Irrigation Branch of the Department and to remedy what you regard as inherent defects of the present system of administration.

2. In reply, I am first directed to observe that while the Government of India was prepared to hear that you are not thoroughly satisfied with the working of the Public Works Department in Mysore as at present organized, it is by no means convinced that the remedy of such defects as may exist is to be found in the measures which you suggest, nor that those defects can properly be attributed to the general system under which the Department is now administered by the Government of India.

3. Comparing the present condition of the Public Works administration in Mysore with what it was six or seven years ago, the Governor General in Council is satisfied that very great progress has been made, and he has little doubt that the actual progress would have been greater if the organization in Mysore had been earlier brought into more complete conformity with that which has been adopted in other Provinces of India. That Mysore should till now have retained an organization which experience has shewn to lead to unsatisfactory results, has been in no small degree the consequence of your own disinclination to accept the system which has been followed elsewhere. Under the peculiar circumstances in which Mysore has been placed of late years, the Government of India has not been disposed to enforce changes which were not acceptable to yourself, however much those changes were to be recommended in themselves. In one important respect this cause of backwardness has now ceased, from your having stated your desire that your Chief Engineer should be appointed also your Public Works Secretary.

4. The Governor General in Council attaches great importance to this change and feels confident that much and immediate advantage will arise from the Chief Engineer being placed in direct communication with the Head of the Administration. The benefit which has been experienced in other Provinces will certainly be felt in Mysore also, and the chief obstacle to the harmonious and satisfactory working of the Department in all its branches will be removed.

5. The Chief Engineer will at once be gazetted as Public Works Secretary, and you are requested to amalgamate the portion of your Secretary's Office which now deals with Public Works business with that of the Chief Engineer, or to transfer a portion proportionate to the amount of work involved in your correspondence with the Chief Engineer which will now entirely cease. It is probable that the simplification of work may lead to a saving in Office Establishment. A copy of

the letter to the Resident at Hyderabad on the mode of conducting the business of his Chief Engineer and Public Works Secretary's Office, is annexed for Major Sankey's information.

6. Another respect in which the Governor General in Council considers the Mysore system to be seriously defective is the disposition it exhibits to follow the Madras model of distributing the duty according to the locality, and not according to the character of the work to be done. The alleged necessity for this practice is made to rest on the requirements of the Irrigation Works, and a remedy can only be found by a radical change of the system of managing these works.

7. This is a subject which has before been discussed at length by the Governor General in Council and on which the conclusions he formerly arrived at have only been strengthened by subsequent experience. What is wanted is to throw off from the Public Works Department absolutely the duty of maintaining the numerous minor tanks in the Province, while proper security is taken that they are not thereby allowed to go to ruin. The Government of India feels satisfied that there can be no real difficulty in effecting an arrangement which shall work satisfactorily, by which the villagers shall keep up all the small irrigation works themselves under some system of Government inspection. For the maintenance of these works, no skill is needed which is not forthcoming in every village, and it is little short of monstrous to persist in the attempt to supervise in detail the execution of every petty repair needed for the 18,000 tanks said to be in actual use for irrigation in Mysore. It is not surprising that, by accepting such a duty which might quite as well be performed otherwise, the power to make really vigorous progress has been arrested from the weight of paltry detail thrown upon the establishments.

8. The Governor General in Council considers the final settlement of this matter of the repair of small tanks to be quite as essential in its own way to the proper organization of an Irrigation Department in Southern India, as a Revenue Survey and Settlement is in respect to the administration of the land revenue. In both cases an overwhelming amount of recurring business of detail has to be got rid of, and until this is accomplished, the public establishments are distracted by labor which is as incessant as it is needless. His Excellency in Council is of opinion that further discussion on this subject would be out of place. The only question that remains open is, how to accomplish in the most effectual manner the end in view, and the Government of India will hope that every effort may be made to effect this without further unnecessary loss of time.

9. This question, however, is one which need not be further referred to on the present occasion. In another form it is already under the consideration of the Government of India, and the views of this Government will be communicated to you hereafter more at length.

10. The Governor General in Council assents to the appointment of a special officer for the supervision of the irrigation business of the Public Works Department in Mysore, and is inclined to think that an officer in the position of a Superintending Engineer should for the present suffice. He might act also as the Under-Secretary, specially in charge of the Irrigation Branch of the Public Works Secretary's Office. To this charge the Governor General in Council will not object to appoint Major Johnson on his return from Europe, if the Commissioner shall then still consider him the most suitable officer for the post.

11. His Excellency in Council, however, is not disposed, in so small an Administration as that of Mysore, at all events just yet, to assent to a complete separation of the irrigation business of the Public Works Department from the control of the Chief Engineer. To do this would tend to frustrate one of the chief objects in view, when placing the Chief Engineer in direct contact with the Commissioner, that of giving consistency and harmony to the Public Works Administration. So far as can be judged, it is not desirable, more particularly under existing circumstances, to establish a separate virtual Chief Engineer for irrigation. For some time to come, whatever is done towards forming a separate Irrigation Branch of the Department, there must be a considerable amount of work of all sorts in the hands of all the Public Works Officers, and until some approach to a complete separation between the two

branches of the Department has been accomplished, it appears to the Government of India that the Department should have one Head.

12. It is moreover necessary to bear in mind that the certain consequence of the strengthened position of the Irrigation Branch of the Public Works Department will be to make the administration of irrigation works fall more into the hands of the professional officers, and to pass from those of the Revenue Officers. Although it is by no means the desire of the Governor General in Council to force on in a premature manner such a change of system, it is proper to point out that it must be regarded not only as inevitable, but as distinctly desirable, as soon as the necessary consistency has been given to the new Irrigation Department. It is, therefore, in this point of view expedient to raise the professional character of the irrigation administration, and having regard to the intrinsic nature of the operations to be carried out, the more difficult engineering questions which these involve, the greater outlay they require, and the higher interest which from their object they command, it seems to His Excellency in Council quite certain that it is right to identify the Irrigation administration with the professional Head of the Public Works Department in the Province.

13. The Government of India is not prepared to assent to your proposal to abolish the special office of Public Works Controller of Accounts for Mysore. It is not known precisely what amount of account work has to be done, but it appears doubtful whether any important saving of expense could be obtained by any plan which should secure proper accuracy and regularity. The only chance of doing something in this way would be to amalgamate the charge of the Public Works Accounts with that of the General Accounts of the Province. To what extent this could be done will be considered separately in the Accounts Branch of this Office, and the results communicated hereafter.

14. After the observations made regarding the Irrigation Branch of the Department, you will be prepared to learn that the Governor General in Council is not disposed to enter into any discussion of the proposals which you make to alter the whole character of the Department, and to revert to a system similar to that which existed before 1855. That system was carefully considered, and condemned almost by universal consent, and the Governor General in Council is not disposed to re-open such a question; nor does it seem to his Excellency in Council that any useful result would be got from enquiring whether it is possible to devise a system under which engineering works should be carried out under a Native Government without professional knowledge. If, in the event of a Native Government being re-established at any future time in Mysore, that Government from any cause cannot command the services of properly instructed Engineers, it is quite certain that the public works of the country will suffer and that no system will save them from that result. In short, neither as regards the present nor the future, can the Government of India accept the proposals which you have made, and you must understand that the question of any fundamental change of system cannot be entertained.

15. To accept your proposals as to the reduction of the Engineerng staff seems to the Government of India impossible, in the face of the Chief Engineer's complaint that he is most inefficiently provided with Officers. Also the idea of making the Chief Engineer *directly* responsible for the execution of works with a staff of half the existing Upper Subordinates, appears to the Governor General in Council quite impracticable.

16. At the same time the Governor General in Council will most readily receive from you any suggestions which you may be able to offer, having in view the education of young men of character and position.—Natives of Mysore, as Civil Engineers, and their introduction into the Public Works Department in Mysore to any extent which may be found possible, having regard to their proved qualifications. His Excellency in Council would be glad if any scheme could be devised under which properly qualified Natives of Mysore were introduced into all the several branches of the Public Works Department, so that they might receive a practical training which would enable them to carry on the engineering business of the country

under a Native Government when the time comes for such a change. It surely is not by an attempt to establish a system acknowledged to be very imperfect, which shall be administered by persons having a minimum of knowledge, that we should aim at the eventual development of an useful Department composed almost wholly of Natives of Mysore. Rather let us maintain the highest possible standard of excellence so long as the Government of the Province remains in our hands, and do all in our power to qualify Natives willing to enter the Department to carry out the duties to be performed in a reallsy atisfactory manner. To adopt any other course could only lead to discreditable failures while our administration continues, and complete disappointment when it ends.

I have the honor to be,
Sir,
Your most obedient Servant,

C. H. DICKENS, *Colonel, R. A.,*
Secretary to the Govt. of India.

General. 3795 / Establishment. 101 } 1868—69.

BANGALORE, 29th September 1868.

To

The Secretary to the Government of India,
Public Works Department.

Sir,

In continuation of my letter No. 2541—63, dated 31st July 1868, I have the honor to submit for the orders of His Excellency the Viceroy and Governor General in Council, copy of a statement which, in obedience to the instructions contained in your Circular No. 48, dated 26th May last, the Chief Engineer submitted with his *letter No. 4375—459, dated 28th July containing his views as to the increase to the existing establishment of the Department which the supervision of Irrigation Works in Mysore would entail. As explained in my letter No. 2541—63, this statement was withheld pending the receipt of the orders of Government on my letter No. 6689—153, dated 27th February. Your letter No. 143, E. I. dated 31st August 1868, having since come to hand, I lose no time in submitting the statement referred to.

*Copy appended.

2. I also annex a copy of the statement B in my letter No. 6689—153, of 27th February, as I deem it of the utmost importance that the establishments under the Civil Officers should be revised as proposed, the amount of labor and the number of accounts which a stricter system demands from them being wholly out of proportion to the present establishments.

3. I shall do my best to carry out the instructions of the Government of India contained in your letter No. 143 E. I., but I defer offering any detailed remarks upon it pending the return from Europe of Captain Johnson, whom I have requested by telegraph to lose no time in proceeding to India. It is to be hoped that on his arrival he will be able, in communication with the Chief Engineer and the Survey and Settlement Commissioner, to determine what division of works may with advantage be effected in the spirit of the orders of Government.

4. I have invariably advocated relieving the officers of the Public Works Department of all minor works, but the expression "minor works" is apt to mislead, for though first class tanks of course entail greater skill in the execution of repairs, it is not to be inferred that smaller ones are mere ponds. They have in all cases their embankments, sluices, and waste-weirs, and it is very doubtful whether the skill required for carrying out repairs will always be forthcoming in every village as supposed. Indeed, the cultivators frequently demand Government aid on the plea that they are unable to carry out such repairs themselves, and the employment of Mestris and Surveyors is generally indispensable. If the Civil Officers could be relieved from all obligations in this respect, I should be glad to see this end attained, but I am convinced that is futile to expect it, I can scarcely anticipate that the numerous repairs of each year will ever be carried out by raiyats exclusively from their own resources, nor would it be just to make those who hold land under smaller tanks defray all attendant expenses while those cultivating under larger works were exempt, owing to the latter being kept in repair by the Irrigation Department. It is further to be noted that the vast majority of tanks belong to Government, and as the Government realizes a cess for their repair, it seems sound policy to allow a yearly sum for the purpose from Government income. On the above and other subsidiary points, a free interchange of opinions between the Superintendent of Irrigation and the other officers referred to by me, including one or two experienced revenue officials should be established and I would suggest that on Captain Johnson's arrival this important subject should be at once discussed by a Committee to be expressly convened for the purpose.

I have, &c.,

L. BOWRING, *Commissioner of Mysore.*

RESOLUTIONS OF THE MYSORE IRRIGATION COMMITTEE CONVENED AT BANGALORE BY THE ORDER OF THE CHIEF COMMISSIONER.

President:

COLONEL C. V. WILKIESON, R.E., Officiating Chief Engineer of Mysore.

Members:

MAJOR C. J. PRESCOTT, Survey and Settlement Commissioner.
MAJOR J. L. PEARSE, Superintendent, Nundydroog Division.
CAPTAIN W. R. JOHNSON, Superintending Engineer for Irrigation.
CAPTAIN D. H. TRAIL, Controller, P. W. Accounts of Mysore.
MR. KRISHNAIENGAR, Deputy Superintendent, Kolar District.

Definition of the different classes of Irrigation Works in Mysore.

1. That works of Irrigation and water-supply in the Mysore Province be defined as follows:—

1. Channels drawn from rivers.
2. Series of tanks.
3. Tanks fed from rivers.
4. Ordinary tanks.
5. Tanks having no irrigation.
6. Inam tanks.

Channels drawn from rivers.

2. Under the heading of "Channels drawn from rivers" will be included all such channels, with their subsidiary works of every description, such as, Anikats, Head Sluices, Distribution Sluices and Channels, Aqueducts, Bridges (excepting such as belong to maintained lines of road), &c., &c.; likewise all tanks below or fed by the channels with all their subsidiary works. The whole of the above together, will be considered as forming one work, and be referred to under the name of that work. The tanks may, however, be numbered with the other tanks in the Province, as a matter of convenience.

Series of Tanks.

3. By "Series of Tanks" is meant the whole of the tanks whose surplus falls into any terminal tank, and includes terminal tank. The whole of these, together with their subsidiary works, such as Feeders, Silt Dams, Distribution Sluices and Channels, &c., shall be considered as forming one project only. The tanks forming any series shall be numbered with the rest of the tanks in the Province, the numbering commencing invariably with the terminal tank.

Tanks fed from rivers.

4. "Tanks fed from rivers" will only embrace such "Civil Works" as may answer that description and are not of sufficient importance to be placed under the Public Works Department.

Ordinary Tanks.

5. "Ordinary Tanks" are single reservoirs catching surface drainage only, their surplus neither falling into any other tank nor the surplus of any other tank falling into them.

Tanks having no irrigation.

6. "Tanks having no irrigation" are reservoirs the water from which may not be used for irrigation purposes. If in a series, they will be considered as belonging thereto.

Inam Tanks.

7. "Inam Tanks" are tanks the irrigation under which yields no revenue to Government and in the management and maintenance of which Government has no direct control.

8. The whole of the tanks in the Province shall be numbered, the numbering in the first instance being carried out by the Taluk Officials. When the number is fixed upon, it shall be legibly painted on some prominent part of the tank, such as the sluice, water-weir, &c., and entered with the designation of the tank in the Register (Form A.) which shall be sent to the Chief Engineer as soon as completed. Ultimately, the whole of the tanks in the Province will be re-numbered, and the number then given indelibly cut in the sluice or other prominent part of the tank.

All Tanks to be numbered.

9. Irrigation works in the Province of Mysore shall be classified as follows:—

Classification of Irrigation Works.

1. D. P. W. Works.
2. Civil Works.

10. "D. P. W. Works" to comprise all such channels and tanks as may be specially placed under the control of the Public Works Department, but generally, all channels and single tanks yielding a revenue of not less than Rs. 1,000, and all series of tanks the average revenue of which is not less than Rs. 500 per tank. The maintenance of these works will be under the direct control of the Public Works Department.

D. P. W Works.

11. "Civil Works" shall comprise all works not placed under the direct control of the Public Works Department. A full list of D. P. W. Works being prepared, all other works will be under the management of the Revenue Officers, who will be held responsible for them.

Civil Works.

12. The following terms may be used in dealing with Irrigation Works:—

Definition of terms to be used in dealing with Irrigation Works.

1. New Works.
2. Reconstruction, Restoration and Improvement.
3. Ordinary Repairs.
4. Special Repairs.
5. Maintenance.

13. New Works do not require definition.

New Works.

14. "Reconstruction" and "Restoration," may be defined as creating afresh the means of Irrigation, after total destruction of a work or its abandonment for 5 years or upwards; "Improvement," increasing the capacity of a work, so as to provide increased means of irrigation. New works and those referred to in this para being "Original" will be carried out by the Public Works Department. When, however, they can be carried out for Rs. 500 or less, it will suffice if the circumstances of each case be clearly laid before the Superintending Engineer for Irrigation. On his concurrence being received, they may be proceeded with by the Civil Officers, it being clearly understood that no work is to be commenced until the receipt of such concurrence, and that the Civil Officers are answerable that all circumstances of importance connected with the project are brought to notice.

Reconstruction, Restoration and Improvement.

15. By "Ordinary Repairs" is meant bringing up a work to the standard of safety that may be fixed for it.

Ordinary Repairs.

16. "Special Repairs" are those rendered necessary by fire, storm, flood, or other unforeseen accident.

Special Repairs.

17. "Maintenance" is the keeping up a work to the standard of safety fixed for it.

Maintenance.

18. "Ordiuary Repairs" of Civil Works will be carried ont under the following rules:—

Rules under which Ordinary Repairs are to be carried out.

19. Can only be undertaken on sanctioned estimate.

Only on sanctioned estimate.

20. If above Rs. 1,000, must be sanctioned by the Chief Commissioner or the Chief or Superintending Engineer.

Must be sanctioned by Chief Commissioner or Chief or Superintending Engineer.

12. If not above Rs. 1,000, may be sanctioned by the Superintendent.

May be sanctioned by Superintendent.

22. If not above Rs. 500, may be sanctioned by the Deputy Superintendent.

May be sanctioned by Deputy Superintendent.

If the estimate exceeds Rupees 5,000.

23. All "Ordinary Repairs," the estimates for which exceed Rs. 5,000, shall be carried out by the Public Works Department.

Breached Tanks not to be repaired without reference.

24. All "Ordinary Repairs" which provide for repairing a breached tank or for any work necessitating the dismantling of any portion of any tank, shall not be commenced until the estimate has been examined in the Public Works Department, and sanctioned. The above is not meant to apply to dismantling the stone facing of any tank for the purpose of simply rebuilding it. When the proposed expenditure however is not more than Rs. 500, the course indicated in Resolution No. 14 may be followed.

Accounts for works undertaken by Civil Officers.

25. Works undertaken by Revenue Officers to be subject to the following regulations in matters of account, &c., in addition to, or supersession of, such orders as may already exist on the subject:—

Sanctions to be communicated.

26. Sanctions to be communicated to the Chief Engineer and Controller as at present, under Code page 127, para 15 and page 179, para 35.

Certificates to be sent with estimates.

27. Every estimate to be accompanied by a certificate from the sanctioning Officer, stating that every precaution has been taken to ensure that the estimate provides for all that will be necessary to place the tank in such thorough repair as will allow of its being handed over to the Raiyats with certainty of its furnishing the settled assessment for the future.

P. W. Department to have nothing to do with Civil Works.

28. All works sanctioned by the civil authorities to be carried out by their own agency independently of the Public Works Department; the responsibility for their being properly carried out and for no remission of assessment being hereafter necessary owing to insufficiency of work resting entirely with them. The fact of the full revenue being regularly received in after years will be a sufficient test for this. Sanction for the increase of Establishment necessary to enable them to carry out this has been applied for by the Chief Commissioner.

Completion Reports.

29. The present rule regarding Completion Reports to be altered to the following. The completion bills for all works above Rs. 500 must be accompanied by a Completion Report signed by the Senior Official who shall actually have seen and inspected the work, giving a comparison of work executed, and that estimated for as per Form V. These Completion Reports must invariably be countersigned by the Deputy Superintendent. Should there be any deviations from the estimate, these should be noted, together with any explanations that may be necessary to enable the charges to be finally passed.

List of tanks to be sent to Controller.

30. The Controller to be furnished with a complete list of tanks in each District in Form C.

Name and No. of Tank to be quoted.

31. The sanction to quote the exact name of the tank, together with the Register No. of the work, to avoid mistakes and to ensure that two estimates may not be accepted for the same work.

Work to be completed in one year from date of sanction.

32. No estimate for Rs. 1,000 and under is to be more than one year, from date of original sanction, in course of execution.

No second estimate to be sent in for ordinary repairs.

33. Under the rules for maintenance specified below, no second estimate shall be submitted for the ordinary repairs of any Civil Work. When once brought up to standard, it will rest with the raiyats to maintain it in that condition, and unless breached by some means out of the power of the raiyats to control, no further repairs to that work will ever be undertaken by the Government.

Cost of repairs to be borne by Government.

34. If the cost of the reconstruction, improvement or repair of a work be repaid by the revenue to be derived from that work within 7 years, the whole cost will be borne by the State.

Partly by Raiyats.

35. To induce Government to undertake work the cost of which will not be repaid in less than 10 years, the raiyats should contribute one-fourth the amount of estimate.

36. If not in less than 15 years, the raiyats' share should be one-third the amount of estimate.

37. If not in less than 20 years, half the amount of estimate.

Remission of assessment not granted.

38. No remission of assessment will be granted to the raiyats on account of such contributions, when Government bears any part of the cost.

If whole cost be borne by raiyats, remission granted.

39. If the whole cost of the work be borne by the raiyats, a remission of $\frac{1}{4}$th assessment may be guaranteed, or such further remission as the Local Government may consider the special circumstances of the case to warrant, and this remission may be granted in the same proportion in all subsequent revenue settlements, provided always that the up-keep of the work is properly maintained by the raiyats: otherwise the agreement shall at once be declared null and void.

Reference to be made before handing over works to Raiyats.

40. No work shall be handed over to the raiyats, as provided in the last para, until the opinion of the Superintending Engineer for Irrigation has been obtained as to advisability or otherwise.

Contributions may be in money or labor.

41. The contributions of the Raiyats referred to in paras 33, 34 and 35 may be either in money or labor.

If in money.

42. If in money, it should be paid into the Treasury before the work is commenced.

If in labor.

43. If in labor, the Department under which the work is carried out will be responsible that proper steps are taken to see that the full value of work is done. If possible, the raiyats' share should be completed before the rest of the work is commenced. When that cannot be done, a distinct portion of the work should be entrusted to the raiyats so as to admit of easy measurement. As the raiyats' contribution of labor will generally be in earth-work, there should be no difficulty about this.

If their excavations are distinct from those of the paid laborers, the quantity executed by them can be easily checked.

If raiyats' share is less or more than Rs. 200.

44. If the value of the raiyats' share is not more than Rs. 200, a certificate signed by the Amildar (Form) will suffice; if their share is upwards of Rs. 200, the certificate must be signed by a Deputy Superintendent or one of his Assistants.

Raiyats to appoint approved persons.

45. One or more approved persons must be appointed by the raiyats to receive orders, sign agreements, or otherwise act in their behalf.

Permanent Bench Marks to be put up.

46. All estimates for ordinary repairs which provide for bringing up a work to its standard of safety, shall provide for the construction of such permanent marks, &c., as shall be requisite to enable the raiyats or any Inspecting Officer to see at a glance that the work is properly maintained. A detail of these marks, as well as other observations regarding points requiring attention in repairs of works, will be furnished elsewhere.

If raiyats will not come forward, or if some hold back.

47. The course to be followed when the raiyats holding lands below an irrigation work will not come forward with contributions for repairs, or undertake to maintain the work, or when some of them agree and others hold back, and when tenders for repairs are made by individuals unconnected with the work, will be decided by the Revenue Officers according to the merits of each case that may occur.

Close watch to be kept during rains.

48. During heavy rain, or whenever a tank is full, a close watch is invariably to be kept on the work; and in case of danger, immediate steps are to be taken to prevent or avert damage.

Emergent cases.

49. In cases of emergency, Amildars are empowered to commence work at once, forwarding an immediate report to the Revenue Officer in the case of Civil Works, and to the nearest D. P. W. Officer as well in case of D. P. W. Works, and applying for sanction; in the meantime, drawing from the Treasury such advances as may be requisite.

50. On a Civil Work being put in thorough repair—in other words, brought up to the standard of safety fixed for it—it will be so described in the Register (Form), full details being given of the condition in which each portion of the work is to be kept, and permanent bench marks fixed to show the exact height and width of the bund, extent of slope, &c., &c. The work is then to be handed over to the raiyats, who will be bound by the agreement under which they hold their land never to allow it to fall below the standard fixed for it.

No remission on account of maintenance.
Maintenance certificates to be produced at Jamabandi

51. No remission of the assessment will be granted to the raiyats, in consideration of the maintenance of Civil Works, it being considered that ample allowance has been made on this account in the Revenue Settlement. At Jamabandi, however, they will produce a certificate (Form) signed by the Shekdar to the effect that the work has been fully maintained.

Course to be followed if maintenance is neglected.

52. In case the certificates should not be forthcoming, and if the raiyats, after being warned, still neglect to put the work in order, the necessary repairs may be carried out by Government, the cost being recovered from the raiyats as an arrear of land revenue.

In case of Inam Tank.

53. Should the work be an Inam tank, or a tank having no irrigation in a series, and not be maintained up to the standard of safety fixed for it, Government may call upon the owners or raiyats to bring up the work to standard ; and on their neglecting to do so, may either repair the work at their own cost, recovering the amount from them as an arrear of land revenue, or if they see fit, destroy the tank, so as to prevent its breaching and damaging others. In the title-deed granted to inamdars (see Inam Rules, dated 1st June 1868, approved by Government of India), Clause 3 provides that Inams are subject to a proportionate share of the cost of the repairs of Government works of irrigation in common with ordinary raiyats.

Maintenance certificates required for Inam Works.

54. Maintenance certificates (Form) will be required for Inam works in the same way as for Sarkar works.

Maintenance certificates to be tested.

55. Ten per cent of the maintenance certificates, taken at random, shall be tested every year by a Revenue officer or officers to be deputed by the Superintendent.

Inspection of Civil Works, duty of Revenue Officers.

56. Under the above rules for maintenance, the inspection of Civil Works will be considered a most important duty of all Revenue Officers, from the Shanbhog upwards, since it is only by the strictest supervision at first that the system can ever hope to obtain a fair trial. A book will be kept in the village to which each work belongs, in which an extract from the register showing standard of safety fixed for the tank will be entered. In this book, all Revenue officers who may visit the tank, whether for purposes of inspection or otherwise, will enter their names, the date and the result of their observations, bringing any neglect or damage at once to the notice of higher authority. It cannot be too strongly impressed on all parties, that nothing is too small to be of importance, and that the slightest damage should be repaired immediately it occurs. If this is done, the repairs will scarcely ever extend beyond a few baskets of earth. It is to be hoped that, by judicious management, villagers may be induced to take a pride in their tank, and that a spirit of emulation may be roused, that will ultimately render supervision little more than a matter of form. The condition of the Civil works in a Taluk will certainly be taken as one great criterion of the efficiency or otherwise of an Amildar.

Panchayet to look after maintenance.

57. The work should be entrusted to the charge of a panchayet chosen by the villagers themselves, who shall have power to make such arrangements as may be necessary for keeping the work up to standard.

Village Officials to call on Panchayet, when necessary.

58. In case of any neglect, the village Patel or Shanbhog shall have authority to call on the Panchayet and villagers to repair the work, and will be held responsible that it is kept up to standard.

59. The proportion of labor for maintenance to be supplied by each Pattadar in the village should be determined by the interest he has in the work, and after being approved by the Superintendent, this list will be entered in the book referred to in para 56. Whenever called upon by the Panchayet, Patel or Shanbhog, each Pattadar will supply labor to the extent of the entry against his name.

Proportion of labor each Pattadar is to supply.

60. In the event of any of the Pattadars neglecting to supply their share of labor when called upon, the Panchayet, Patel or Shanbhog will have authority to hire labor, and the defaulter shall be liable to forfeit a sum not exceeding double the amount that would have been payable to the laborers (at the prevailing labor rate) which such Pattadar shall have failed to supply.

Penalty in case Pattadars neglect to supply their share of labor.

61. In the event of a work breaching, owing to any neglect on the part of the villagers, the damage to that work, as well as such damage as the breachmay have caused to any other work, will be repaired by Government, and the cost recovered from the villagers as an arrear of land revenue.

If Tank breaches through neglect.

62. Inamdars will be held equally liable with Sarkar raiyats for the maintenance of Civil works, and will be subject to the same penalties.

Inamdars liable for their share of maintenance.

63. Steps should be taken for handing over the maintenance of Civil works to raiyats, as fast as they can be brought up to standard.

Tanks to be handed over to raiyats at once.

64. In addition to the maintenance of Civil Works, there are portions of the D. P. W. works, such as small distributing channels and works connected therewith, that will fall on the raiyats to maintain under the same rules as apply to Civil works. The maintenance of the bund, masonry works and main channels, where they are large enough, will be undertaken by the Public Works Department.

Portions of D. P. W. Works to be maintained by raiyats.

65. In Districts in which there are no large rivers, the tanks generally follow one another in one continued series; in fact, it may be almost said they are all in some series. While many of them are of sufficient importance to require professional supervision, the great majority are not. In such cases, the only plan is to consider the circumstances of each series separately, and decide which shall be D. P W. works, and which Civil works. The limit laid down in para 10 is merely intended as a guide and not to be strictly adhered to, should circumstances seem to render it unadvisable.

Some Tanks in series to be classed as Civil Works.

66. The village authorities should be directed to note in the book alluded to in para 56, each time, their tank discharges over the waste-weir, with the height and duration of such discharge. For this purpose, gauge should be marked on the sluice pillars, or other convenient place.

Discharge of Tank to be noted.

PRESIDENT — C. V. WILKIESON, COL., R. E., *Offg. Chief Engineer of Mysore.*

MEMBERS —
C. J. PRESCOTT, MAJOR, *Survey and Settlement Commr.*
J. L. PEARSE, MAJOR, *Superintendent, Nundydroog Divn.*
W. R. JOHNSON, CAPTAIN, *Superintending Engr. for Irrigation.*
D. H. TRAIL, CAPTAIN, *Controller, P. W. Accounts, Mysore.*
B. G. KRISHNAIENGAR, *Deputy Supt., Kolar District.*

MEMO OF POINTS REQUIRING ATTENTION IN THE MAINTENANCE OF CIVIL WORKS.

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1. All bunds, whether of tanks, channels, or feeders, to be kept perfectly level and up to the section fixed for them; or when bench marks are supplied, perfectly level between such bench marks. Care should be taken that the portions of the bunds *outside* waste-weirs are not neglected.

2. The top of all bunds to be kept of an uniform width and clear of jungle.

3. The front slopes of all bunds to be kept free from ruts and of the regutlated slope, such steps as may be necessary being taken to prevent or check erosion. If revetted, any displacement of the revetment to be rectified as soon as it takes place,—any soil that may be washed through the stones to be instantly replaced by the best soil procurable in the neighbourhood. The same precautions to be taken with the rear slope, which, if so ordered, is to be kept planted up with shrubs or aloes.

4. No encroachment of cultivation on the bunds to be allowed under any circumstances whatever.

5. No hedges, buildings or other obstructions to be allowed on any part of the bunds.

6. All prickly pear that may grow on any part of the bunds to be destroyed.

7. No large trees to be planted on or within 20 yards of the toe of the slope of any bund.

8. No cattle to be allowed to graze on any bund, or to be driven over any of the masonry works, with the exception of the bridges provided purposely.

9. No earth to be excavated from beds of tanks within 10 yards of front slope of bunds. Beyond that distance, raiyats should be, by every possible means, encouraged to remove the silt, for the purpose of manuring their fields.

10. Sluices, cisterns, &c., to be kept clear of silt and in good order. The slightest leakage or derangement to be immediately reported to the Amildar. It is believed that more tanks are breached from leakage caused by settlement or derangement of sluice tunnels than from any other cause.

11. Waste-weirs to be carefully attended to, and any leakage through these works and round their wing walls watched for and reported immediately. Any derangement of the packed stone should be instantly rectified.

12. Distribution and feeding channels to be always kept clear of silt, free from leaks and up to section.

13. Silt traps to be kept in proper repair, and care taken that the stream does not force a fresh channel on either side.

14. No cultivation or gardening to be allowed on the sarkar land between the ordinary waterspread and the assessed cultivation. The raiyats have no rights over this land of any sort, and if enclosed, the grass that would grow on it would be very valuable and be a step towards inducing raiyats to grow fodder, which is very necessary; otherwise valuable plantations of Babool and other trees might be grown thereon. By utilizing the land in this way, a deal of silt that is now brought into tanks might be arrested. It is now a common practice for the raiyats to loosen the soil by digging up grass, or by turning out their pigs on it, after which a shower of rain carries all the loosened stuff into the bed of the tank. The extent to which tanks are deteriorated in this way is serious.

No. 1343.

MYSORE PUBLIC WORKS DEPARTMENT.

SUPERINTENDING ENGINEER'S OFFICE,

Bangalore, 10*th November* 1869.

From

CAPTAIN W. R. JOHNSON,
Superintending Engineer of Irrigation Works of Mysore.

To

The Offg. Secy. to the Chief Comr. of Mysore, P. W. D.

SIR,

In accordance with instructions conveyed in endorsement as per margin, I have the honor to make the following suggestions for the future management of the main Irrigation Channels in the Mysore Province, and the subsidiary works connected therewith.

On letter No. 38—8, dated 2nd April 1869, from Superintendent, Ashtagram, to Superintending Engineer.

II. These channels which aggregate 697 miles in length, are now in charge of a Conservancy Establishment under the immediate orders of the Revenue Officers. This establishment which (with the exception of being placed under the Revenue Officers) was framed on recommendations contained in a memorandum drawn up on the subject by me, has now been working for five years; and there is, I believe, no doubt as to the great advantage that has already resulted from its agency.

III. Prior to the formation of this establishment, there was simply no system whatever. The watchmen received merely nominal pay, which was supplemented by a miras from the raiyats, and as the amount of the miras depended on the favor shown by the watchmen to the raiyats, the watchmen were of course much more the servants of the raiyats than of the Government. These arrangements under the oppressive form of Native Government, are said to have answered pretty well, so far as revenue was concerned. The raiyats were forced to pay for their lands, whether they cultivated, or got a good crop from them, or not. The works themselves were repaired and kept in order at a cost little more than nominal, the labor being pressed, and the materials being obtained in a similar manner; but as a different form of Government was gradually introduced, the necessity of more systematic treatment became apparent in the difficulties that were constantly cropping up. The first attempt at the introduction of the present system was sturdily resisted by the raiyats, but a great deal has since been effected. The revenue below the channels has been increased; the channels placed in a much more satisfactory condition; the establishment put on a proper footing; and the raiyats accustomed to some sort of distribution of water and control in that and other matters. The great difficulty of introducing the system has been got over, it is hoped for ever, unless it should be decided to introduce some system, differing altogether from that at present in force.

IV. But the system has nevertheless been little more than that introduced; it is far from having been perfected. Up to this time, no plans or sections of the channels exist, and the annual repairs carried out are frequently undertaken in a wrong direction. The masonry and other subsidiary works connected with the channels are in very dilapidated state and require thorough overhauling from first to last. The water is distributed under no proper system; a very large annual outlay is incurred on repairs which might, under proper professional supervision, be ultimately avoided to a great extent. The water now wasted should be utilized, and the revenue, it is hoped, permanently and considerably increased.

V. The strength of the present establishment, including temporary sanctions, is as follows, and details will be formed in Appendix A :—

No.	Rank.	Rate.	Pay per mensem.	Total per annum.
				Rs.
208	Watchmen	5	1,040	12,480
24	Manegars ..	10 to 15	250	3,000
7	Overseers ...	20 to 35	185	2,220
3	Darogas ...	100 to 175	375	4,500
1	Superintendent	300	300	3,600
			2,150	25,800

VI. This establishment is distributed as follows :—

One Watchman to every	...	3	...	miles channels.
One Manegar	...	16½ to 47	...	do
One Overseer	...	67 to 135	...	do
One Daroga	...	164½ to 266½	...	do
One Superintendent	...	697		do

VII. The duties of the watchmen are nominally to distribute the water from the main channels, after which the raiyats distribute it themselves—to go over the whole of their beat once a day, or as often as possible ; see that all is in proper order ; repair small damages ; report large ones ; keep the banks clear of jungle, and the roads along them in order ; see that no encroachments or other irregularities are committed by the raiyats ; and in case of accident, to assemble and give their best assistance towards repairing the damage. In the present state of the channels, the work is exceedingly heavy, and the above duties cannot be efficiently carried out, as owing to no proper provision being made for cross-drainage, the waste-weirs, and silt-sluices are at a very low level, and have to be temporarily dammed up to force the water down the channel. These temporary dams have to be removed at a moment's notice, in case of a storm, and require continual attention to keep them water-tight. The watchmen have each a beat of three miles, and if they went over it every day, would, as a rule, have to cover six miles of ground, without taking any incidental work into account. For the smaller channels, I consider that the present allowance of one watchman to every three miles of channel will be sufficient, but for the more important works, it is absolutely necessary that the numbers be increased, if the establishment is to be rendered efficient. The Channel Superintendent most strongly recommends this, and I fully concur with him. From what I can learn, I believe that in Bombay one of these men is allowed for each mile at a much higher rate of pay.

VIII. The Manegars, the next individuals in rank to the watchmen at present, have average ranges of about thirty miles. It is of course absolutely necessary that the watchmen should be constantly looked after and kept to their duty, and as they are mere laborers, that they should have some one within hail to whom they can make their reports, and who shall have authority to give orders and forward information in writing to the officers whom it may concern. These men get from Rs. 10 to Rs. 15 per mensem, and are answerable for the presence of the watchmen on their beats, the state of the channels in their respective ranges, the immediate reporting of accidents, &c. The average beat of these men, 30 miles, is too extensive, and does not allow of their exercising that continual supervision over the watchmen that is so necessary. I have therefore recommended that the number be increased from twenty-two to thirty-one. Details will be found in Appendix B. Their pay is kept at Rs. 10, except in one case, in which I have recommended Rs. 15, as no Overseer is appointed to the beat.

IX. The next grade is that of Overseer, of which there are seven, having an average range of 100 miles of channel each. These men are, as a rule, old Departmental Mestris intimately acquainted with the channels and Irrigation works generally. To them is entrusted the charge of their respective ranges, the preparation of details for the Repair Estimates, and the carrying out and supervision of the work. Having been employed in the District for many years, they are well up in its resources, both as regards labor and material, and are in fact the most important men in the Establishment. Their ranges are far too large to allow of their carrying out their work efficiently, and I have recommended their numbers to be increased from seven to ten, which will allow of their beats being made much more compact. I have also recommended a scale of pay which, however, I do not propose to grant at once, but gradually, to the most deserving men. The highest pay recommended is Rs. 50, which is low for the qualifications required; but I have refrained from making it higher, on account of the excess it would cause over present sanction. I propose that in future they should be called Sub-Overseers, to which grade they properly belong.

X. The next grade is that of Darogas, who are supposed to be men with qualifications similar to those of Overseers in the Public Works Department. To them was entrusted the supervision and the measuring up of work, the preparation of such estimates, surveys, levels, &c., as were required, and the submission of accounts. They have an average of 232 miles of channel to look after. The Channel Superintendent reports that at present they merely condense and pass on papers from the Overseers to him, and are practically useless. It will be seen below that I have recommended the appointment of another Channel Superintendent, which if sanctioned, will render the employment of these Darogas unnecessary, as each of the Channel Superintendents will be then able personally thoroughly to supervise their respective circles and carry on their correspondence direct with the Overseers. This close and constant supervision by an officer will, I am convinced, be attended by the very best results. My experience in the Department precisely coincides with that of the Channel Superintendent, that the supervision of the Daroga class of men is practically useless, and that the higher class of supervision will be infinitely more economical in the long run. As the channels, moreover, will be under the Irrigation Department, all professional assistance in the way of surveys, levelling &c., the Channel Superintendent cannot carry out himself, and will be carried out by the Public Works Subordinates. The abolishment of these men is strongly recommended by the Channel Superintendent, and as I fully concur therein, I have struck them out in the proposed scale, utilizing the saving thus effected in adding to the other grades of the establishment.

XI. The Channel Superintendent is the head of the Department, and is now immediately under the orders of the Revenue Officers. To him is entrusted the conservancy and repair of these works, improvements not involving any considerable amount of professional skill; the distribution of the water, &c., &c., &c.. His charge consists of 700 miles of channel, within an area of the Province eighty-four miles in width and eighty-eight in breadth. It will be quite evident that the constant supervision necessary for important works of this kind cannot be given by one man over such an extent of country, and it has been found that the Channel Superintendent has been obliged to confine his attention almost entirely to the more important works in the Cauvery (Ashtagram) Division, leaving those in the Hemavati (Hassan) Division, to the charge of one of the Darogas; an arrangement loudly complained of by the Revenue Officer at Hassan. The number of miles of channel in the present Cauvery Division is 532½, and in the Hemavati Division 164½: but the upper channels on the Cauvery, 110 miles in length, are very conveniently situated to the Hemavati Division, and I propose they should be included in that range as shown in the accompanying sketch map, and a new Superintendent of Channels appointed. This arrangement will leave the Cauvery Division with 422½ miles, the Hemavati with 274½ miles, the revenue in the former in 1868-69 being Rs. 2,23,345, in the latter Rs 1,07,855. This is the most equable arrangement that can be conveniently made.

XII. If the above propositions are approved, the increase in the establishment (details of which will be found in Appendix B) will be Rs. 308 per mensem, the present monthly expenditure being Rs. 2,363; and it will, both in my opinion and in that of the present Channel Superintendent, be thoroughly efficient. The whole

of the details have been most carefully gone through, and I can recommend no reduction in the establishment now asked for.

XIII. The next point for consideration is the manner in which this establishment is to be amalgamated with the new Irrigation Branch lately sanctioned. This branch, so far as these channels are concerned, consits of two Executive Divisions, each of which is composed as follows:—

One Executive Engineer.
Two Assistants.
Two Upper Subordinates.
Lower Subordinates, Rs. 100, say two.

XIV. These two Irrigation Divisions are called the Cauvery and the Hemavati. As above stated, the number of miles of channel it is proposed to allot to the Cauvery Division is 422½ and to the Hemavati 274½.

XV. The two Executive Engineers that have been placed in charge of these Divisions belong to the Senior Covenanted Engineers lately imported from England. These gentlemen, not having been brought up in the country, are as yet unacquainted with their Districts, the habits, customs and language of the people; and as these qualifications are absolutely essential for the constant intercourse with the raiyats which the management of these works necessitates, it would be simply inviting failure to place them in charge without some properly qualified person to assist them. It is for this reason I have proposed to continue for some time to come, the appointment of the Channel Superintendents, who will be of course placed under the orders of the Executive Engineers, but will manage these works as heretofore sending their estimates, reports, papers, &c., to the Executive Engineer instead of to the Revenue Officers. The Executive Engineer will pass on to this office such of them as he cannot dispose of, with his remarks, and thus in time acquire an intimate knowledge of the interior economy of the works, after which the appointment of Channel Superintendent may cease, or rather (if the officers qualify themselves by passing the necessary Examination) be absorbed into the establishment as Assistant Engineers, the Executive Engineers themselves becoming the actual Superintendents of the Channels.

XVI. By this arrangement, it is hoped the transfer will be made almost imperceptibly, the work go on as smoothly as if it had not taken place, and the jarring and clashing consequent on an abrupt change of system be altogether avoided.

XVII. It remains for me to state the manner in which I propose to carry out, first, the construction and maintenance of these works (adopting the classification in Colonel Strachey's report, dated 2nd September 1868); secondly, the management and distribution of water-supply; thirdly, Fiscal administration.

XVIII. I must premise in the first place that the works with which the Irrigation Department will have to deal (so far as these channels are concerned) are already constructed and in action, and that the work to be undertaken in connection therewith, is their extension and improvement in a systematic manner rather than the construction of entirely new works. Amongst other things, it has been suggested that a number of anikats may be done away with, and the land irrigated under the channels drawn from them, fed from other anikats to be improved or reconstructed. Up to this time, we have no plans or sections of these channels; we are equally badly off for important data in connection with the fall and discharge of the rivers, and drainages above the channels. Until this data is collected, it appears to me useless to indicate proposed improvements, but so far as I am personally acquainted with these works, I do not think it is likely that the ultimate abandonment of more than perhaps one or two of these head works (if any) will turn out to be advisable, and so long as a small expenditure will keep them in working order, I am certainly not prepared to recommend it. The Cauvery Division is now engaged with the re-construction of the Marchully anikat and channels drawn from it, and the preparation of projects for the improvement of the Chikdevarsagar channel, many of which have been provided for in the Budget, and will be put in hand this year. As hands become disengaged, they will be put upon the Davarayi and Viziyanudi channels, and their improvement will be taken up in the same way, and so on, until the whole of the works have been dealt with. In the Hemavati Division, the establishment is engaged in constructing the Sriramadevar Dam, and in preparing the project for the channels drawn therefrom. The estimate for the

improvement of these works, so far as they at present extend, will be sent in immediately, and that for the proposed extension will follow soon after, and as soon as any portion of the establishment is at liberty, it will be set to work in getting out sections for the remaining channels in the Division, and in preparing projects for their improvement. It will thus be seen that the rapidity with which the improvement of these works can be undertaken is entirely dependent on the strength of the establishment that can be brought to bear upon it, and I would not recommend that this most important duty of the Irrigation Branch should be retarded by handing over to it any further portion of the working of the channels than indicated in para XV. I consider it absolutely necessary that Superintendents of Channels proposed by me should be for the present retained, and that they should have the immediate management of the channels subject to the orders of the Executive Engineers.

XIX. Should any comparison be made between the work the new Department will have to do, and the work done by fewer officers previously, all I have to say is that a different class of work is now asked for, and that this new Department has been sanctioned for the express purpose of furnishing it. The Department as previously constituted could not draw up projects with the detail and care required by Government. Major Sankey brought this to notice over and over again, and the hopelessness into which several of these projects have drifted is sufficient proof of the correctness of his views if any is wanting. This being the case, then I hope the Department will be allowed a fair chance and not swamped with a lot of minor work, of no very great importance, to the prejudice of the more important duties for the execution of which, as stated above, it has been expressly sanctioned by Government.

XX. In addition to the systematic extension and improvement of these works which will be gradually carried out by the new Irrigation Branch, a large sum (last season amounting to Rs. 61,600) is annually expended on repairs. The manner in which these repairs have been carried on hitherto is for the Superintendent of Channels to prepare and send in estimates through the Revenue Department to the P. W. office by which these estimates are sanctioned, the masonry work being carried out by the Overseers of the Channel Department, and the earthwork by the Amildars of the Taluks. The measurements, &c., have been hitherto checked by the Channel Superintendent and the Darogas.

XXI. The manner in which I propose the work should be carried out in future, is for the estimates to be prepared as heretofore by the Channel Superintendent and forwarded by him through the Executive Engineer to this office. On their being sanctioned, the work will be carried out by the Channel Sub-Overseers, who will be furnished with small imprests, constituted disbursing agents, and called on to furnish security to the amount of Rs. 200. The work will be inspected and measured up by the Channel Superintendents and the Executive Engineers; and if further assistance is necessary, it will be obtained from the establishments belonging to the Irrigation Divisions. As the channels are brought into order, the necessity for these repairs will gradually cease, and as the estimate will, as soon as the levels are completed, be based thereon, it is hoped the work done will be more efficient than heretofore. It will be observed that so far the alteration involves the least possible change in the present system, while a much superior class of supervision is provided.

XXII. There is one point however that requires notice, namely, the manner in which the earthwork and urgent repairs have hitherto been carried out. I have stated in para XX that this has been entrusted to the Amildars of the Taluks and the labor in consequence to a certain extent pressed. When the work is taken over by this Department, the raiyats in some places will not willingly come forward to carry out the work, although for their own benefit every inducement in the shape of regular payments, &c., will be held out to them, and will, it is hoped, be successful; but experience renders this more than doubtful. I wish to draw particular attention to this, in order that until some definite rules are laid down regarding this difficult question of forced labor, the Revenue Officers may be cautioned that they are still expected to compel villagers to render assistance when absolutely required for the repair of these works. This is the more necessary, as the Public Works is unfortunately looked upon by Revenue Officers generally as an alien Department and treated accordingly.

XXIII. There is another subject that will require orders, namely, that regarding channel offences; but as I am not prepared with full information thereon, I would prefer leaving it for another communication rather than delay this longer.

XXIV. As regards the management and distribution of water, I have already sent in propositions in this office No. 993, dated 25th September 1869; as regards fiscal management I have nothing to add to the remarks in my memorandum, dated 18th March 1869, in which I stated that although I did not consider it advisable to transfer the collection of Channel Revenue from the Revenue Officers to the Public Works Department, I nevertheless considered that the most cordial co-operation was essential, and that the Channel Officers should invariably be consulted before remissions were made, or fresh land given to raiyats.

XXV. I find I have omitted to notice the office establishment I have allowed for the Channel Superintendent. In case it should be considered high, I beg to explain that the office duties are very heavy, and are likely to remain so, if they do not increase owing to the change in system. As soon as the works are taken over from the Revenue Branch, contumacious raiyats will take that opportunity of re-opening old sores, and the Kanarese references may be expected to be very numerous: a Munshi and Mutsaddi are absolutely necessary; the estimator will also act as a Head Clerk. I have cut down the establishment asked for by the Channel Superintendent, but do not consider he could do with less than I have now allowed him.

XXVI. I should also mention that I propose to fix the Head-quarters of the Hemavati Division at Narsipur, which, as will be seen from the sketch map supplied, is much more central than Hassan for that range. Hassan is the Head-quarters of the Revenue District, and as such, would be convenient, but it is considered that the more central position as regards the channels more than counterbalances the disadvantage that may arise from being a short distance from the District Head-quarters.

XXVII. In conclusion, I have merely to request that I may be authorized to entertain the balance of the establishment for the Irrigation Division lately sanctioned by Government, and to include the proposed establishment (Form B) in the next Budget.

I have the honor to be,

SIR,

Your most obedient Servant,

W. R. JOHNSON, CAPTAIN,

Suptg. Engr. of Irrgn. Works in Mysore.

No. 230 E. I.

From

The Secy. to the Ch. Comr. of Mysore, P. W. D.

To

COLONEL STRACHEY,
Inspector General of Irrigation.

SIR,

I am directed by the Chief Commissioner to forward for the sanction of the Government of India a * proposal for the transfer of the Conservancy Establishment for irrigation channels from the Civil Officers to the Irrigation Department from the commencement of the next official year. The establishment is solely for petty repairs and conservancy to 697 miles of irrigation channels in Ashtagram Division, and is paid for out of the Civil Budget amounting to Rs. † 2,150 a month or Rs. 25,800 yearly. On the proposed transfer, some small revision in establishments is proposed by the Superintending Engineer for Irrigation, which is shown in statement, and this also requires the sanction of the Government of India.

* Letter No. 1343 of the 10th November 1869 from Superintending Engineer for Irrigation, with statements.

† or Rs. 2,363 per mensem, including office establishment or Rs. 38,356 per annum.

2. For the last five years, the arrangements with regard to the conservancy and petty repairs to the channels in the Ashtagram Division, comprising nearly 700 miles of channels from the Hemavati, Lakshmantirtha and Cauvery rivers, giving a yearly revenue of about 3½ lakhs of rupees, have been solely under the Civil Officers, with an establishment costing Rs. 25,800. This establishment, the details of whose duties are fully explained in the letter from the Superintending Engineer for Irrigation, supervised all petty repairs, were answerable that the channels were kept in good repairs, looked after the sluices, and in fact did everything required, except larger repairs, alterations or renovations which required engineering skill, when the Executive Engineer of the District was called in.

3. The actual cost of such repairs came from the Department, Public Works Budget, on estimate sanctioned on by the Chief Engineer; but the establishment itself was paid out of Civil Budget, and never became a Public Works charge.

4. At the commencement of the present year, a new Irrigation Department was made in Mysore, consisting of a Superintending Engineer and three executive charges. Two of these Irrigation Divisions comprise these nallas, and it is now proposed to give over to these officers the charge of the nallas, divided as proposed by the Superintending Engineer into the Hemavati and Cauvery Divisions.

5. For the present, at all events, it is proposed to keep up this Conservancy Establishment, which has worked so well heretofore; but eventually when the Executive Engineers of the Irrigation Divisions become more used to the charge, the two Nalla Superintendents may be absorbed into Assistant Engineers, belonging to these Divisions; but at present, the Superintending Engineer does not consider this feasible, and as there must be some difficulty at first on this Department taking charge when it had to work quite independent of the Civil authorities of the District, this arrangement is recommended for sanction on the understanding that it is to be only temporary.

6. The comparative statement sent in shows that the monthly difference of present establishment and that now proposed is Rs. 308 in excess, for which Captain Johnson gives sufficient reasons.

7. In conclusion, I am directed to request the sanction of the Supreme Government to the transfer of the Conservancy Establishment for the nallas in Ashtagram from the Civil to the Public Works Department, Irrigation, at an increased cost of Rs. 308 a month. This has been included in the Budget for 1870-71.

8. It is to be observed that the establishment in question has nothing to do with fiscal duties, nor is it proposed in the Irrigation Department of Mysore that they should have anything to do with the collection of water rates.

I have the honor to be,
SIR,
Your most obedient servant,

4th December 1869.

C. V. WILKIESON, COL., R. E.,
Secy. to the Ch. Comr. of Mysore, P. W. D.

No. 27 E.—I.

GOVERNMENT OF INDIA,

Public Works Department,—Irrigation Establishment.

To

The Chief Commissioner of Mysore.

Fort William, 14th January 1870.

SIR,

I am directed to acknowledge the receipt of your Offg. Secretary's letter No. 230 E. I. of 4th December 1869, and in reply to communicate the provisional approval of the Government of India to the proposals therein contained, for the transfer of the Conservancy Establishment for Irrigation Channels in the Ashtagram District, from the Civil Department to the Irrigation Branch of the Public Works Department.

2. Admitting that the changes tend in the proper direction, yet the Governor-General in Council is not altogether satisfied with the proposed distribution of duties, and would suggest that it will probably be found better at all events, to some extent, to separate the duties of construction and maintenance from those of distribution and regulation of the water and control of the irrigation. Thus leaving the watchmen or patrols, and the superior class of manegars, much as now proposed, the Governor-General in Council considers that the Sub-Overseers should be under the orders of a Superintending Officer of the regular Public Works Establishment, probably an Upper Subordinate, who should himself be directly under the Executive Engineer, or an Assistant; while the persons now called Channel Superintendents, should take up the position of Canal Deputy Collectors and Zillahdars of the Canals of Northern India, and manage the water as distinguished from the works, dealing directly for these purposes with the manegars or patrols.

3. Judging from the strength of the establishments, it appears to the Governor-General in Council that by allowing the two Superintendents now proposed, the whole of the duties could be quite readily carried out in the manner above suggested. The difficulty referred to by Major Johnson, of the want of experience of the Executive Engineers, would be avoided by having the persons in charge of the actual *irrigation* as distinguished from the *works* of the Deputy Collector class, requiring of them such professional and technical knowledge as their peculiar duties would demand. For the present they might continue to supervise the maintenance, but the sooner they devote themselves to the irrigation exclusively, merely bringing to the notice of the Executive Branch any defects or wants, the sooner will a really good, economical and properly remunerative system be brought into existence.

4. The Canal Deputy Collectors would form a suitable connecting link between the Canal Officers Proper and the District Revenue Officers, and having had a Revenue training would be better able to arrange any difficulties that might arise between the two Departments. They would deal with petty offences against irrigation rules, and determine disputes as to sufficiency of supply, &c., under the general control of the Executive Engineer. It would, the Governor-General in Council considers, be very unadvisable to convert these Officers into mere Public Works Assistant Engineers, as they need not be Engineers in any high sense, though a certain elementary knowledge of the duties of an Irrigation Officer would be very useful to them, and should be eventually required of them.

The separation of the merely administrative from the merely Executive duties may, in the opinion of the Governor-General in Council, be very usefully carried out in the manner above suggested, and I am therefore directed by His Excellency to invite

you to consider these remarks in communication with Major Johnson, and to report the conclusions at which yon may arrive. In the meantime, and subject to any further orders in the Financial Department, the present proposals are provisionally approved by the Government of India, as tending to the eventual formation of the proper system.

I have the honor to be,

Sir,

Your most obedient servant,

Under-Secretary to the Government of India.

No. 608.

MYSORE CHIEF COMMISSIONER'S OFFICE,

PUBLIC WORKS DEPARTMENT.

From

The Secretary to the Chief Commissioner of Mysore,
Public Works Department.

To

The Superintending Engineer of Irrigation, Mysore.

Dated 28th January 1870.

Government of India No. 27 E. I. of the 14th January 1870, approving provisionally of the proposals for the transfer of the Conservancy Establishment for Irrigation Channels in the Ashtagram Division from the Civil Department to the Irrigation Branch of the Public Works Department and communicating remarks on the subject.

In forwarding copy of the above, Major Johnson is requested to be good enough to report on the several points noticed by Government.

By order,

C. BOWEN, LIEUT, R. E.,

Asst. Secy. to Chief Commr. of Mysore, P. W. D.

REVENUE SURVEY DEPARTMENT.

NOTIFICATION.

No. 198.

The 9th February 1870.

The following Revised Survey Guarantee is applicable to the taluks, in the Province of Mysore, already brought under the operation of the Survey Settlement, and is published for general information, in supersession of all Guarantees previously promulgated.

By Order,
ROB. A. COLE,
Offg. Secretary.

MYSORE GOVERNMENT GUARANTEE.

Notice is hereby given to the occupants and cultivators of Government lands in the villages of the————Taluk, in which the Survey Rules have been promulgated, that the rates of assessment introduced by the Revenue Survey in the year——, are guaranteed as follows :—

I. The assessment now imposed by the Revenue Survey on all dry crop lands, and on lands watered solely from wells, will not be raised for————years, *viz.*, from the year————to————.

II. During this period dry crop land which may be converted into wet crop solely at the cost of occupiers or cultivators, will not be subjected to any extra assessment whatever, nor will any extra tax "Bab" or "Patti" be imposed on account of fruit or other trees planted hereafter by occupiers or cultivators, or on account of superior crops being grown.

III. If a well is dug by the cultivator, or a water course (kálvé) made from a stream the water of which is not the produce of a work constructed at the expense of Government, no additional assessment will be imposed.

IV. Government reserves the right of prohibiting wells being dug, or water courses (kálvés) being made when they interfere with the storage of the water in a work constructed by Government. This right of prohibition may be enforced in relation to any particular work under the orders of the Chief Commissioner on the representation of the Irrigation Department.

V. If Government afford an additional supply of water by the construction of new works or by the improvement of existing works, the right of imposing an additional assessment upon land benefiting by the increased supply of water is reserved to Government.

VI. It is imperative on the owners and occupiers of land lying under tanks and works, the property of Government, other than those under the direct management of the Irrigation Department, to maintain the up-keep of such tanks and works after they have been brought up to standard. In case such up-keep shall not be duly maintained, it shall be competent to Government to maintain the up-keep of such tanks and works, and the cost of the same shall be rateably distributed amongst the raiyats and inamdars according to the survey valuation of their respective holdings, and such amount shall be recovered as a regular revenue demand.

VII. When small tanks (or Guntés) included within the boundaries of occupied dry crop survey numbers, shall be restored by the occupiers or cultivators of such numbers no additional assessment will be imposed during the currency of this settlement, *i. e.*, for————years from the year——to——.

VIII. The collection of grain levies ("Aya") by Patels and Shanbhogs is abolished by the Survey Settlement, but the existing practice of payment of such grain levies to minor village servants, Talari, Toti, Nirganti, &c., is not interfered with by the Survey Settlement.

Forests and Woods.

IX. In Government reserved-forests, the disposal of all wood of any description, and the grazing right, is vested in the Forest Department.

X. To each village a certain portion of land is assigned at the Survey Settlement as free grazing land for common use. Excepting the nine reserved descriptions of timber, according to the list in the margin, all wood in these common lands is reserved for the use of the villagers under such rules as may from time to time be issued by the Chief Commissioner. Timber of the reserved kinds in these common lands shall be at the sole disposal of the Forest Department.

Honne.
Lac-tree.
Nandi.
Wild Jack.
Poon.
Kárachi.
Teak.
Sastri & Abnus. } Blackwood.
Sandalwood.

XI. In the case of land already occupied at the time of the Survey Settlement, or taken up for occupation at, or after, that settlement, all wood shall be made over to the occupant on such terms as the settling officer may arrange, excepting the nine reserved descriptions mentioned in the preceding paragraph. The disposal of the wood of these reserved kinds shall be vested in the Forest Department up to one year from the date of the settlement, or from the date of the survey number being taken up; if taken up after the settlement, should the Forest Department not remove the wood within the above mentioned period of one year, it shall, excepting sandalwood, become the exclusive property of the occupant, to whom also any wood henceforward growing in the survey number in question, excepting sandalwood, shall exclusively belong.

XII. In all unoccupied assessed or unassessed lands, trees of the nine reserved kinds are the exclusive property of Government; but trees of the unreserved kinds may be used by the general public under the provisions of the Forest Rules.

Local Funds.

XIII. As the plough tax and all extra cesses on land of whatever kind have been absorbed in the revised assessment of the Revenue Survey, the Government of Mysore will impose for the full term of this settlement, on all land, in addition to the Survey assessment, one anna in each rupee of such assessment (according to the Survey valuation of each raiyat's holding), which will be devoted to the construction and repairs of roads, to educational purposes, and to such other local objects as may be deemed necessary.

XIV. On all wet crop lands, an additional anna in each rupee shall be imposed, which shall be devoted exclusively to repairs, improvements and reconstruction of works of irrigation, but not to maintenance, except to tanks and works, the charge of which is taken by the Irrigation Department.

XV. All inam lands will pay local fund and irrigation cess according to their Survey valuation, or in the absence of this, on the recorded value of the inam.

XVI. Kayamgutta and Sarvamanyam villages shall pay local fund at the rate of one anna in the rupee, the former at the fixed kayamgutta rent, and the latter on the recorded value of the inam.

By Order of the Chief Commissioner,

W. C. Anderson,

Survey & Settlement Commr.

No. 129 I.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.

FORT WILLIAM, MARCH 12, 1870.

Restoration and Maintenance of Minor Irrigation Reservoirs in Mysore.

Read again the following correspondence :—

From Commissioner, Mysore, No. 2, dated 5th May 1863.
To Commissioner, Mysore, No. 899, dated 29th „ „
Public Works Department Resolution Nos. 2878—80, dated 24 June 1863.
To Foreign Department, No. 49, I., dated 24th March 1868.
From Foreign Department, No. 89, I., dated 3rd April „
Notes of Proceedings of a Committee assembled at Bangalore, from 17th to 22nd March 1868.
From Foreign Department, No. 1, dated the 20th August 1868, and enclosures.
From Commissioner, Mysore, No. 6689—153, dated 27th February 1868.
To Commissioner, Mysore, No. 143 E—1. dated 31st August „

Read also :—

Letter from Commissioner, Mysore, No. 3074—80, dated 24th August 1868, and enclosures.
Letter from Commissioner, Mysore, No. 3795—101, dated 29th September 1868, and enclosures.
Letter from Commissioner, Mysore, No. 4881—121, dated 1st September 1868.
Letter from Commissioner, Mysore, No, 49, dated 23rd March 1869, and enclosures.
Letter from Commissioner, Mysore, No. 114, E., dated 7th June 1869.

OBSERVATIONS.—The Governor-General in Council observes that a regular revenue assessment and settlement is now being introduced in Mysore for the first time. A very large part of the lands in Mysore is irrigated, and till now no separation had been made in the land revenue assessment between that part of the amount which is dependent on the water-supply. Nor had any definite system of rules been laid down to define the relative responsibilities of the Government and the landholders in relation to the maintenance of the Irrigation works, chiefly small tanks.

2. Two years ago, when Colonel Strachey was at Bangalore, he became aware of the above circumstances, and he drew out a memorandum on the main points that seemed to him to call for attention on the part of the Revenue Surveyors in their operations, so as to secure the satisfactory working of the irrigation of the country both as regards the interests of Government and the people. This memorandum was sent to Mysore, and was carefully gone into by the Commissioner with the Revenue Survey Commissioner and the Public Works Officers. The conclusions arrived at were reported in June 1868.

3. The question being one which involved matters relating to the land revenue settlement and assessment, the Foreign Department had also been addressed by Mr. Bowring on the subject, and the papers were sent to this Department for an expression of opinion in August last.

4. While the above was going on, another discussion had also been before the Government of India as to the proper footing on which to place the Public Works Establishments in Mysore. The only part of this discussion to which it is here necessary to refer, is that which relates to the Establishments required for Irrigation works. This manifestly in no small degree must depend on the system of administration that was adopted. The Government of India, in the Public Works Department letter No. 143 E—I, dated 31st August 1868, stated its views on the subject. A Special Officer was authorized to take charge of the Irrigation Branch of the Public Works Department, and comments were made as to the system under which the minor Irrigation works were kept up, which operation has till now constituted a very onerous part of the duties of the Public Works Establishment

5. The delay in dealing with the papers that have already been referred to, was in some measure purposely allowed to occur to admit of the Chief Commissioner taking into consideration the remarks made by the Government of India in the Public Works letter of 31st August 1868. The conclusions come to on the original consideration of Colonel Strachey's memorandum had not been quite so definite as was desirable, and it was expedient that the officer who was placed at the head of the Irrigation Branch of the Public Works Department should have the opportunity of considering the subject before it was finally disposed of.

6. The Government of India is now placed in possession of more full and mature expressions of the views of all the chief authorities in respect to the questions at issue, and there is no reason for further postponing the final decision. On the contrary, it is very important that no more time should be lost, and as the settlement is going on steadily, it will be very inconvenient if the conclusions come to are found to call for any important change of system, after the settlement operations have been in progress for a prolonged period.

7. The Commissioner's letter No. 49, dated 23rd May 1869, contains the final practical conclusions which have been arrived at by a Committee of experienced Officers assembled by his orders, and these will now be considered by His Excellency the Governor-General in Council.

8. The substance of the Committee's Report is to recommend that a large proportion of the Irrigation works in Mysore shall be transferred for purposes of repair from the Department of Public Works to the Revenue Authorities, who would have to be provided with a petty establishment to carry them out, and that, after these repairs shall have been completed, the maintenance of the works in proper order shall rest with the cultivators, subject to a general supervision on the part of the Revenue Officers. The mode in which these arrangements are to be carried out is described in detail, but before passing orders on the various proposals of the Committee, it would seem desirable that the general principle on which they are based should be considered by the Government of India.

9. At present all the Government tanks in Mysore are repaired, or supposed to be repaired, by the Public Works Department. There are 26,450 of them, of which 4,106 are large reservoirs, 13,737 small, and 8,609 unirrigating. It is generally admitted that neither the establishments as now constituted, nor the funds placed at their disposal for expenditure, are adequate for the maintenance of this enormous number of works. Various proposals for an improved system have from time to time been proposed by the Chief Engineer, Chief Commissioner, and other Authorities, but it may be concluded that all former reports have been fully considered by the Committee, and it will not be necessary therefore to refer to them further than to remark that the general drift of the proposals of the local Engineer Officers was to strengthen the hands of the Public Works Department, while that of the suggestions of the Revenue Officers was to the effect that no real improvement could be hoped for until the mass of the tanks were transferred to their own charge.

10. Colonel Strachey's views are fully expressed in his Note, dated 2nd September 1868.* He is satisfied that there has been an unfortunate disposition to accept as a foregone conclusion, that the duty of carrying out the repairs of the minor tanks must fall either on one of the Departments or the other. He points out that the course which seemed to him to be almost essential, namely, the possibility of getting rid of all direct Government interference, had hardly been noticed, and he shows under what conditions the responsibility of maintaining these small works should be thrown on the village communities.

*Paras 97—104.

11. The Committee accept Colonel Strachey's recommendation with regard to the final management of the works, but they propose an intermediate process by which the works requiring execution in order to fit the tanks for final transfer to the village communities, should be carried out by the Revenue Authorities, instead of by the Public Works Department. They propose that all works sanctioned by the Civil Authorities, that is up to Rs. 1,000 for a single estimate, shall be carried out by their own agency independently of the Public Works Department, the responsibility of their being properly carried out, and for no remission of assessment being necessary after the transfer from Government to the village, resting entirely with the Revenue Officers.

Para 25.

12. This in substance would be to revert for a time at least to the system that formerly obtained in Madras, and which has been very generally condemned.

A great deal of the money granted under that system for the repair of Irrigation works fell into the hands of the subordinates. The number of works was so great that it was quite impossible that they could all be measured up before the setting in of the rains, which obliterated the marks by which their accuracy could be checked, and many were never measured at all. Of late years the establishment has been increased, and the works are, or ought to be, inspected, that is, measured up by Officers or Subordinates whose standing is considered a sufficient guarantee of their honesty. Nevertheless, neither in Madras, nor, it is believed, in Mysore, are the rules fully acted up to. Many of the works are so small, and at so great a distance apart, that the expenditure upon them would not even equal the amount of an Officer's travelling allowance for the time occupied on the journey. The only check on the Subordinates is, that they cannot know beforehand what works will be selected for inspection. A really good Executive Officer will succeed in preventing serious frauds, but to accomplish this a great part of his time and energy must be devoted to police rather than to purely engineering duties.

13. His Excellency the Governor-General in Council is satisfied that the proper performance of work by the lower class of Subordinates, such as Mestris, is entirely dependent on the degree of supervision exercised over them. There is no reason to suppose that the Mestris, or other Lower Subordinates in the Public Works Department are either better or worse than those who may be employed by the Revenue Officers; they are probably both exactly alike, both a most useful class of servants so long as they are closely looked after, and if they are not, the reverse.

14. If it is essential that the works should be carried out in such a way as to prevent the misappropriation of the sums allotted, His Excellency the Governor-General in Council thinks it would probably be necessary to this end, that the work of the Subordinates should be supervised by a comparatively highly-paid and competent class of Officers. It may be allowed that the works under consideration are of the commonest kind, many of them requiring no engineering skill in their execution; but still some technical qualifications are necessary in the inspecting officers. It is impossible that an Executive Officer, on visiting a tank on which a certain sum of money had been laid out, could tell by simple inspection whether work corresponding to the money laid out had been done or not. He would call for the production of the Subordinate's journal containing a record of the earth-work pits given out for excavation; he would select any he fancied for measurement, and ascertain whether the excavations had been really done, or if he found any indications of error, he would measure up the whole. Precautions would also be necessary to prevent old excavations being passed upon him as new ones. It is not likely that a Collector or Superintendent of a Division, or his Assistant, could undertake this duty, nor would it be proper for him to do it if he could, and if left to Subordinates, there can be no guarantee that the duty would be properly performed.

15. It would thus either come to work being left undone, or being improperly done by Subordinates under the orders of the revenue officers, or a highly-paid professional establishment must be attached to the latter. Such an arrangement would be objectionable, not only because it would involve an establishment exactly similar to the ordinary executive establishment in the Department, of Public Works, and in addition to it, but because it would be entirely exempt from the supervision and control which the latter are subject to on the part of the Superintending and the Chief Engineer. It is not improbable that such an arrangement might appear to work well for some years, but it might still be productive of very mischievous effects in the long run. This matter has, moreover, been carefully considered in Madras, where similar conditions as regards the management of Irrigation Works prevail. The Members of the Madras Public Works Commission of 1863 entered upon their enquiries with a strong impression that the only satisfactory way of ensuring the execution of minor works and repairs, especially those connected with Irrigation, was to transfer it to the Collectors and their Subordinates, but the conclusion they arrived at was that the arrangement was impracticable, except at a considerable increase of expense. And although the Government of India have frequently expressed a strong desire to see the Engineers relieved of the charge of petty works, no plan which should ensure their proper execution by the revenue officers, without involving an additional highly-paid estiblishment, or without encountering difficulties

similar to those met in executing the works by the Public Works Department, has yet been brought forward.

16. On these considerations, His Excellency in Council cannot agree without reserve to the proposal of the present Committee to carry out the repairs and improvement of a large proportion of the tanks in Mysore by the agency of the Civil officers, preparatory to handing the works over to the cultivators. But though having considerable doubts as to the expediency of the proposal for the reasons that have been given, and not being prepared to allow of the arrangement advocated by the Committee being made applicable to the whole of Mysore, His Excellency the Governor-General in Council will not object to its being introduced in a single district as a tentative measure, and in combination with a corresponding experiment as to the result of Public Works agency. The question is admitted to be a difficult one of solution, and it is possible that the Government of India may have overrated the difficulties, which it is evident have not struck the local officers as they have done His Excellency in Council. It does not appear that the general policy of undertaking the thorough repairs of the minor Irrigation Works, and then handing them over for subsequent management by the raiyats, has any necessary dependence on the system or the agency by which the repairs are to be carried out. The same results would be obtained if the officers of the Public Works Department, repaired a tank or a series of tanks, and then handed them over to the raiyats, as if this had been done by the officers of the Revenue Department. The propriety or otherwise of the proposed transfer may, therefore, be considered on its own merits, quite irrespective of the agency employed in the preliminary repair or improvement of the works.

17. Turning to this part of the subject, His Excellency the Governor-General in Council must in the first instance remark that it seems impossible that any sensible person should question the expediency of giving over to the direct management of the cultivators all works that they could be trusted to keep up to a serviceable standard. Any opinion which may have been expressed against the measure must have been based on the assumption that the repairs would be neglected by the raiyats, and that the tanks would in consequence either fall into complete ruin, or Government would have in the end to step in and spend a much larger sum in restoring them than would have been necessary had the arrangement of the tanks been retained in its own hands all the time. Though His Excellency in Council does not accept this view as necessarily the correct one, yet it seems to some extent to be supported by the experience of the past, since Mr. Bowring* has shown that everywhere in Mysore the obligation of the Kodagidars, that is, holders of Inams, on condition that they keep the tanks in repair, has been shamefully neglected, and, therefore, however clear the right of the Government to enforce the repairs may be, they are in practice not enforced. With such a warning, it is plain that special attention is needed to this aspect of the proposal.

*Proceedings 1869, Foreign Department, Revenue A, 18th November 1869.

18. It might be supposed that it is only necessary to give such terms to the raiyats as would make it really profitable to them to maintain the works to ensure their doing all that is necessary. But this is not confirmed by experience. Each raiyat deals separately with Government for his holding, and there may perhaps be 20 holdings under a tank which does not yield a total revenue of more than 100 or 200 rupees. There would always be danger of so many people failing to work well together, of the stronger trying to throw his share of the burden on the weaker, and of disputes among them leading to delay, if not the loss of a season, in the execution of the necessary repairs. And moreover, there is not generally the same obvious urgency in regard to repair of tanks as there is for clearances of the channels that lead the water to the land to be irrigated. A raiyat knows that if the latter are neglected, he cannot possibly get the means of raising a crop, whereas in the case of tanks, the loss may not be so immediate, and indeed may not come upon him personally at all, or on any one for years.

19. It would thus appear to His Excellency the Governor-General in Council, that the plan recommended by the present Committee has little chance of succeeding, unless the rules proposed for the maintenance and inspection of the works in charge of the raiyats are strictly enforced. The principle of the proposed arrangement is no doubt good; the only question is, whether the officials, from the Superintendents

of Divisions downwards to the head men of villages, will be able in practice to carry out the Committee's programme.

20. The Chief Commissioner does not apparently anticipate any difficulty, since he recommends the adoption of the various proposals without any qualification. But while His Excellency the Governor General in Council considers the laudable attempt of the Committee to improve upon the present defective system deserving of encouragement, he thinks that it will be desirable to limit operations in this case also to a single district in the first instance, and to modify the Committee's Rule No. 61 so as to provide for the Engineers of the Irrigation Department being required to see that all needful measures are promptly taken for carrying out repairs which may be neglected by the raiyats.

21. Rules 34 to 44 of the Committee's Report provide for cases in which raiyats may contribute a share of the cost of re-constructing or improving a work. It is not explained whether the additional revenue to be obtained from such improvements is to be merely estimated, or whether the raiyats are to be bound to make it good, when applying for the work; and it would appear that the provision in para 39 requires correction, since the whole cost of the work to be borne by the raiyats, for which a remission of one-fourth assessment is to be made, might happen to be something quite insignificant.

22. The Committee propose to have a proper register kept up of all the tanks in Mysore. This will be very necessary, and His Excellency in Council has no doubt that, if returns are drawn up showing expenditure and repairs on each tank for a series of years, it will be found that many of them are unremunerative; some may be radically defective, others may have silted up, and be unable to hold sufficient water for the lands under them. And the management, not the proprietorship, of many of the very small tanks might be transferred entirely to the raiyats, either on payment of dry-crop rates, or on otherwise favorable terms.

23. In the Madras Presidency there are upwards of 9,000 Government tanks, each irrigating under about 13⅓ acres, and the execution of repairs to them is still on the hands of the Government Officers. There must be a great number of such tanks in Mysore and the transfer of them to the cultivators should be the first step taken towards improvement.

24. His Excellency in Council would further wish to make a few remarks on some of the specific recommendations of the Committee.

The meaning of the Committee's Rule 10 is not clear, but if they intend that all "series of tanks," the average revenue of which is not less than Rs. 500 per tank, may include tanks yielding singly a revenue of Rs. 1,000 or upwards, His Excellency the Governor-General considers the arrangement open to objection, and that it will probably be better to retain under the Public Works Department all "ordinary tanks" and channels with a revenue individually of Rs. 1,000 and upwards, and all "series of tanks" which comprise tanks individually yielding a revenue of Rs. 1,000 and upwards. But before the Government comes to any decision on this point, it is desirable that some information should be furnished about the different "series of tanks" in Mysore.

25. Rule 33.—When a tank is breached by some means out of the power of the raiyats to control, it would not be necessarily expedient to do nothing. The repairs might possibly be properly undertaken by Government. The Chief Commissioner might decide when this should be done on the reports of the Civil Officers and Engineers. In such a case, the settlement should, however, be held to be open to revision.

26. Rule 61 may be modified as before said to provide that the Irrigation Branch of the Public Works Department should be called upon to estimate for, and execute repairs, in the event of the villagers neglecting to carry them out. The amount of the estimate should be advanced to the Engineers, who will execute the work, or see that it is executed properly, and submit a bill for the same. The amount which should include a charge for petty establishment should then be recovered from the raiyats by the Civil officers as an arrear of land revenue.

27. In closing these remarks, His Excellency the Governor General in Council would observe, that the Government of India has long recognized, and indeed insisted on, the necessity of effecting a radical change in the administration of the numerous small Irrigation Works in Mysore, and has frequently pointed out the importance of relieving the Public Works Establishment from a duty which might be quite as well performed by the cultivators themselves.

28. His Excellency the Governor General in Council considers that the proposals now brought forward are in the right direction, and desires to give them a fair trial. But as difficulties, at present unforeseen by the Committee, may be met with and interfere with the success of the new system, it is desirable, as above stated, that the change should be introduced in a somewhat tentative way. With this view, two districts might be selected: in one, the Minor Irrigation Works, corresponding to the class of "Civil Works" proposed by the Committee, would be repaired or improved by thePublic Works Department in the first instance, and afterwards transferred to the cultivators; and in the other, the repairs would be carried out by the revenue officers and similarly transferred to the raiyats for maintenance; in both cases, under the conditions laid down by the Committee, modified as above suggested. The actual results from both districts should be compared after a suitable period, and the question as to how the other districts in Mysore should be dealt with may then be reviewed.

29. When the tanks are handed over to the villagers, it will be necessary to appoint a special officer to each of the two districts above mentioned, in view to a proper system of supervision being carried out under the control of the Irrigation Department. It may be left to the Chief Commissioner to decide whether it will be proper to let the cost of such an officer, with the needful establishment, be borne by the general revenues, or be charged to the villages whose tanks are inspected. This will depend on the rate at which the revenue is being assessed, and the nature of the allowance made to the cultivators for the maintenance of the tanks.

30. The operations of the civil officers in the district in which the restoration works are to be carried out by the revenue officers, may be conducted under the rules proposed by the Committee (14 to 32). A budget limit would indicate the general scope of operations. In the district selected, a general plan of the proposed arrangements should first be sketched out, showing what sum would be required for its complete execution, and the period likely to be occupied in carrying it out fully. Such a view, if accompanied with maps exhibiting the position of the different series of tanks, and lists of the number of tanks grouped in classes in each series, will give the Government of India better evidence than it now has of what is really likely to be practicable in the way of such a general improvement of the Irrigation Works in Mysore as is aimed at. A corresponding arrangement and review would be made in the district in which the work was to be carried out by the Public Works Department. The first operations should be designed on such a scale as would deal in a satisfactory and financially practical manner with a definite portion of country, and fairly test the new proposals.

31. In the list of establishment for civil officers applied for by the Commissioner in his letter, dated 29th September 1868, the requirements of each district are not shown separately, and the precise number of Subordinates required to give effect to the above instructions cannot therefore be ascertained. The Chief Commissioner may, however, be authorized to entertain, in anticipation of formal sanction, the establishment required for the tanks in accordance with the scale he has proposed, subject to the limitations above proposed.

32. His Excellency the Governor General in Council considers it necessary that the Rules Nos. 57 to 62 drawn up by the Committee, or any other regulations which may be required for defining the duties and obligations of the village officials or cultivators with regard to the maintenance of Irrigation Works, should have the force of law. There must be no room for doubt as to the liabilities that are imposed in this matter, or as to the means of enforcing them. The Chief Commissioner should, therefore, proceed to frame the rules in a proper form, and submit them to the Government of India for approval in view to these intentions being carried out.

ORDER.—Ordered that these observations, with copy of the communications last read, be forwarded to the Foreign Department for *early* consideration and approval, with reference to its Extract Proceedings No. 1, dated the 20th August 1868, the original papers received with which are herewith returned.

Colonel, R. E.,
Offg. Secy. to the Govt. of India.

No. 191.

From

The Superintending Engineer, Irrigation Works of Mysore.

To

The Secretary to the Chief Commissioner, P. W. D.

SIR,

IN reply to your No. 608, dated 28th January 1870, forwarding copy of Government of India No. 27 E. I., dated 14th January 1870, regarding the transfer of the Conservancy Establishment for Irrigation Channels in the Ashtagram Division from the Civil to the P W. D., and requesting me to report on the several points noticed by Government, I have the honor to state—

II. The cultivation below these Irrigation channels being at present almost entirely rice, and one crop only being raised when the rivers are in flood, *viz.*, from July to December, the Conservancy Establishment are only engaged on the actual duties of Irrigation for six months in the year, and if their duties are to be strictly limited to those of Irrigation, they will have nothing to do for the remaining six months of the year during which they now look after the maintenance and minor repairs. It will be seen therefore that for six months in the year they are engaged in duties of Irrigation, and for six months on maintenance; again, the duties of Irrigation and maintenance on these channels are so intimately connected, and the channels cover so large an extent of country, that it would be most inconvenient and expensive to hand over maintenance and minor repairs to another establishment.

III. My object in proposing that the Channel Superintendents should ultimately be Assistant Engineers, was to give them a prospect of promotion. Engineering qualifications are undoubtedly requisite for a Channel Superintendent, and in fact this is admitted in para 4 of the letter from Government under reply. I can conceive no better training for an Irrigation Engineer than charge of these channels under the supervision of the Executive Engineer, whereas this training would scarcely be of much value to a Revenue Officer. It must be borne in mind that in Mysore the duties of a Channel Superintendent have nothing in common with similar appointments in Northern India, and that they are relieved of all work in the shape of collection, &c., the only Civil duties it is proposed to give them being those of a Magistrate for the purpose of adjudicating on channel offences only.

IV. I observe that in para 3, Government authorizes the establishment continuing to supervise the maintenance as heretofore; the establishment will therefore be handed over to the P. W. D. as proposed from the 1st April next, and should it appear to me that the alteration suggested by Government is desirable, I shall at once bring it to notice.

I have, &c.,

W. R. JOHNSON,

Superintending Engineer.

BANGALORE,

3rd February 1870.

No. 26 *E. I.*

From

The Assistant Secretary to Chief Commissioner, P. W. D.

To

The Secretary to Government of India. P. W. D.

SIR,

I HAVE the honor, by desire of the Chief Commissioner, to forward for the information of Government the following *remarks by the Superintending Engineer for Irrigation on certain points alluded to in your letter No. 27 E. I. of 14th January 1870, on the subject of the transfer of the Channel Conservancy Establishment to the Public Works Department. I am to observe that

*Copy of Supg. Engineer's letter No. 191 of 3rd Feb. 1870, excepting the first and last paras.

the Chief Commissioner concurs with Major Johnson regarding the employment of the establishment, on maintenance repairs, and that the system and manner of working will be reported on after a year's trial.

I have, &c.,
7th February 1870. C. BOWEN, LT., R.E.,
Assistant Secretary to Chief Comr., P. W. D.

GOVERNMENT OF INDIA.
PUBLIC WORKS DEPARTMENT.
ESTABLISHMENT.
Irrigation.

No. 87 *E. I.*

To

The Chief Commissioner of Mysore.

Fort William, 3*rd March* 1870.

SIR,

Referring to the remark in para 2 of your Offg. Secretary's letter No. 26 E. I. of the 7th ultimo, that the system and manner of working the Conservancy Establishment for Irrigation Channels in the Ashtagram District, recently transferred from the Civil Department to the Irrigation Branch of the Public Works Department, will be reported on after a year's trial, I am directed to request that a Revenue Account may then be submitted, showing clearly all receipts and charges connectad with the channels, in order that the Government of India may be in a better position than at present to judge whether the apparently high scale of Establishment should be continued.

I have, &c.,
A. B. SAMPSON,
Under-Secretary to the Government of India.

No. 71 *E.*

From

The Secretary to the Chief Commissioner of Mysore, P. W. D.

To

The Secretary to Government of India, P. W. D.

SIR,

With reference to your letter No. 27 E. I., dated 14th January 1870, provisionally approving of the proposals for the transfer of the Conservancy Establishment for Irrigation Channels in the Ashtagram District made in this Office No. 230 E. I. of 4th December 1869, subject to further orders in the Financial Department, I have the honor by order of the Chief Commissioner to inform you that he has on the recommendation of the Superintending Engineer for Irrigation provisionally appointed Mr. G. P. Denton to the post of Channel Superintendent, Hemavti Division, on a salary of Rs. 200 per mensem to be increased hereafter on approval to Rs. 250, the full salary allotted for the post, and to solicit the sanction of Government thereto.

II. Mr. Denton was employed for some years in the P. W. Department as an Assistant Engineer and allowed to resign his appointment, *vide* Government of India No. 2368, dated 23rd June 1862. In his selection for the post, the instructions conveyed in paras 3 to 5 of your letter No. 27E. have been carefully borne in mind; he possesses the requisite qualifications on the following points, namely, a thorough acquaintance with the language and customs of the people, experience of the channel works and their management, and the requisite knowledge of engineering; and though the correspondence of 1862 connected with his removal from the Department was very unfavorable to him as an Officer of the D. P. W., yet as Major Johnson, the Superintending Engineer of Irrigation, who was the Executive Engineer, under whom Mr. Denton was employed up to the time he left the Department, and is therefore well acquainted with him, has strongly recommended his re-employ-

ment as proposed, the Chief Commissioner has been induced to allow him another trial. The Executive Engineer has been directed to report on the manner in which Mr. Denton carries out his duties every six months, and he will not be confirmed until these reports are satisfactory.

Bangalore, dated 19*th April* 1870.

I have, &c.,
C. V. WILKIESON, COL., R.E.,
Secy. to the Ch. Commr. of Mysore, P. W. D.

No. 158—2024 *E. I.*

From

The Offg. Under-Secy. to the Ch. Comr. of Mysore,
Irrigation Branch.

To

The Secy. to the Govt. of India, P. W. D.
Simla.

SIR,

In forwarding to you the statement of receipts and charges connected with the River Channels in the Ashtagram Division called for in your No. 87E. I. of the 3rd March 1870, I am directed to make the following observations:—

2. The statement gives the names of the channels together with the whole revenue derived from the lands irrigated by them, whether collected by the Government or Inamdars, the average annual cost of repairs during the past five years and the cost of the establishment maintained to perform the duties described in the Superintending Engineer of Irrigations' letter No. 1343 of the November 1869, forwarded under cover of this Office No. 230 E. I., dated 4th December 1869. The percentage of the cost of up-keep is calculated on the gross revenue including both Government and Inam.

3. This percentage amounts to 27 in the Hemavati Division, and 20·1 in the Cauvery Division, the difference being occasioned by the channels in the latter Division being on the average much larger than in the former.

4. In the column for remarks, a remission of Rs. 12,307 is shown to have been made on the Chikdaversagar Channel, and Rs. 709 on the Viziyanadi Channel. In the latter channel, the remission was necessitated by the supply near the end of the channel falling short; and in the former partly because water was not supplied and the Bannur Tank at the end of the channel filled at as early a date as usual, a delay which by better management on the part of the Channel Conservancy Establishment might have been avoided, but chiefly through the failure in the month of September of an old native waste weir which discharged the water of a large jungle stream falling into the channel in the 30th mile. This channel being sixty-four miles long, and intercepting the cross drainage for the whole of that distance (with the exception of the Anche Halla and Lokani jungle streams in the 2nd and 26th miles respectively), the Government will understand how liable it must be to such accidents, and I am therefore only to add that projects for the improvement of both the Chikdaversagar and Viziyanadi Channels are now nearly ready for submission in full detail.

5. The Chief Commissioner has directed that four of the channels in the Hemavati Division, the Bombadahalli, the Kittur, the Arahalli and the Chakratirtha on which the cost of up-keep is altogether disproportionate to the revenue collected, should be handed over to the village officials, who will be responsible for the performance of the duties hitherto carried out by the Conservancy Establishment. A reduction in the cost of the Conservancy Establishment to the extent of Rs. 780 annually will be made by this step, and sanction will be requested in the regular form, so soon as the necessary information can be collected regarding the recommendation on which such an excessive strength was originally made.

6. The result as shown in the last division of column 2, and in column 5, gives the revenue collected under these channels in 1870-71, as Rs. 2,871 less than the average collections of the five preceding years. Comparing the general land revenue of the Province for the same periods, there is a falling off due to the low price of grain of Rs. 1,82,224, and Colonel Meade does not therefore consider

the statement now forwarded to be wholly unsatisfactory, but he looks for far higher returns as soon as time permits of the effect of superior management and scientific repairs to the channels coming fully into play.

I have, &c.,

W. CHRYSTIE, MAJOR, R.E.,

Offg. Under-Secy. to the Ch. Comr. of Mysore, I. B.

BANGALORE,
28*th August* 1871.

Memo showing the revenue of the Mysore Province from 1865-66 to 1870-71:—

	Rs.
1865-66	77,25,767
1866-67	66,56,778
1867-68	80,92,251
1868-69	77,53,672
1869-70	75,47,652
1870-71	73,73,000

Statement showing the Receipts and Charges connected with the River Channels in the Ashtagram Division to accompany letter No. 158—2024 E. I. of the 28th August 1871 to the Government of India.

	Name of Channel.	Revenue realized in 1870-71.			Cost of repairs in 1870-71.	Cost of establishment for one year.	Average annual revenue for five years ending 1870-71.	Average annual cost of repairs for five years ending 1870-71.	Total cost of up-keep for one year.	Percentage of up-keep to revenue.	Remarks.
		Government.	Inam.	Total.							
	1	2	3	4	5	6	7	8	9	10	11
	Hemavati—										
1	Cuttepure	15,596	1,180	16,776	2,164	1,938	16,749	3,488	5,426	32·3	Percentage of cost of up-keep is calculated on the gross revenue including the Inamdars' revenue.
2	Ramnathpur	5,427	251	5,678	701	896	5,697	1,041	1,937	34·0	
3	Ramasamudra	12,740	1,450	14,190	197	1,135	13,983	1,065	2,200	15·7	
4	Tippur	3,528	2,463	5,991	...	1,030	8,434	563	1,593	18·8	
5	Humpapur	5,748	540	6,288	112	807	6,633	641	1,448	21·8	
6	Mirle with its branches	9,663	450	10,113	102	1,127	13,246	1,113	2,240	16·9	
7	Saligram	9,107	266	9,373	487	687	6,058	783	1,470	24·2	
8	Saligram Hosa	1,979	...	1,979	...	269	1,979	199	468	23·6	
9	Mundigere	7,348	118	7,466	1,531	1,031	7,313	1,654	2,685	36·7	
10	Akkihebbal	2,022	142	2,164	533	290	1,907	760	1,050	55·0	
11	Hamageri	216	5,878	6,094	...	871	6,052	*657	1,528	25·2	* This is portion spent by Government in 1869-70, the Inamdars' portion being Rs. 2,811. All future repairs will be carried out by the Inamdars. Repairs carried out by the raiyats.
12	Kalhalli	189	1,505	1,694	...	438	1,619	...	438	27·0	
13	Kannambadi	6,196	277	6,473	451	614	6,470	888	1,502	23·2	
14	North Sriramadevar	5,752	177	5,929	} 4,353	1,927	10,822 for one year.	† 4,353	1,927	17·8	† This expenditure is not to be taken as general annual repairs. It was for the purpose of placing the channels in working condition after the re-construction of the anikat which has been in ruins for the last eight years.
15	South Sriramadevar	2,442	137	2,579							
16	Bombadahalli	391	11	402	250	240	485	350	590	121·6	These channels have been transferred to the Revenue Department for management by the Hobli and Village officials, and the establishment for them dismissed.
17	Kittur	1,120	...	1,120	149	451	1,008	499	950	94·2	
18	Archalli	448	44	492	...	156	190	101	257	135·2	
19	Chakratirtha	310	93	403	79	156	375	123	279	74·4	
20	Madugutta	1,690	46	1,736	316	451	1,729	428	879	50·8	
21	Chengravalli	1,084	112	1,196	408	221	1,621	856	1,077	66·4	
22	Mudanahalli	552	...	552	37	156	539	180	336	62·2	
23	Halvagal	688	...	688	143	160	673	236	396	58·9	
	Total ...	94,236	15,140	1,09,376	12,013	15,051	1,13,582	15,626	30,677	27·0	

Name of Channel.		Revenue realized in 1870-71.			Cost of repairs in 1870-71.	Cost of establishment for one year.	Average annual revenue for five years ending 1870-71	Average annual cost of repairs for five years ending 1870-71.	Total cost of up-keep for one year.	Percentage of up-keep to revenue.	Remarks.
		Government.	Inam.	Total.							
1		2	3	4	5	6	7	8	9	10	11
	Cauvery—										
hikdevarayasagar Range.	Chikdevarayasagar	60,873	11,552	72,425	7,107	5,319	70,397	9,170	14,489	20·58	A remission of Rs. 12,307 has since been granted reducing the net revenue of the year to Rs. 60,118. Do Rs. 709 do to Rs. 33,648.
Viziyanad Range ...	Viziyanadi	33,316	1,041	34,357	3,115	3,575	33,546	3,903	7,882	17·16	
	Hulasinkura	19	...	19	...		19	...			
	Davarai	5,112	...	5,112	384		5,093	281			
	Baugardoddi	5,708	1,778	7,486	...		7,417	123			
Talkad Range ...	Ramaswami	15,047	10,458	25,505	1,226	3,626	25,384	1,593	6,734	13·32	
	Rajuparameswari	9,630	1,812	11,442	542		11,358	791			
	Mohadevamantri	12,459	1,286	13,745	435		13,798	724			
Periyapatna Range	Katte Malwaddi	2,339	172	2,511	215	2,449	2,398	297	4,616	29·43	
	Seriyur	2,211	14	2,225	279		2,198	317			
	Hussainpur	2,979	14	2,993	400		2,985	358			
	Marchalli	1,204	38	1,242	...		1,241	...			
	Anandur	4,617	324	4,941	508		4,726	1,195			
	Cholenhalli	1,398	135	1,533	...		1,505	...			
	Purnaparsanna	597	...	597	...		629	..			

Heggaddevankote Range ...	Hanagod ...	2,358	34	2,392	699	3,103	5,378	1,546	7,291	48·21
	Nellur Govindhalli ...	467	...	467	...		404	340		
	Wudur ...	2,110	...	2,110	309		1,968	531		
	Daranpur ...	702	...	702	...		609	172		
	Hanumantapur ...	2,122	...	2,122	1,351		1,949	947		
	Maicalve ...	2,296	...	2,296	133		2,027	213		
	Durigal Tank ...	1,393	...	1,393	310		1,301	227		
	Lutchmanpur ...	1,351	...	1,351	200		1,487	212		
Chamrajnagar Range ...	Hougalwaddi ...	6,074	178	6,252	840	...	6,084	1,373	1,818	...
	Hunganur Tank ...	5,777	229	6,006	909		5,848	352		
	Sergur ...	1,033	11	1,044	112		1,088	93		
	Alur, new ...	1,439	70	1,509	453	1,836	1,501	149	2,418	16·98
	Alur, old ...	1,255	...	1,255	97		1,255	39		
	Homma ...	3,546	388	3,934	254		3,160	184		
	Morlehalla ...	2,051	6	2,057	137		2,120	83		
	Hosahalli ...	1,438	64	1,502	190		1,634	112		
	Kullur ...	245	...	245	...		245	15		
Maddur Range ...	Ané ...	3,625	71	3,696	432	1,041	4,094	453	1,944	14·48
	Kemmanu ...	2,969	23	2,992	...		2,956	112		
	Chamenhalli ...	2,605	42	2,647	117		2,828	156		
	Biron ...	2,097	111	2,208	...		2,340	15		
	Vaidyanathpur ...	1,060	133	1,193	...		1,201	167		
	Total for Cauvery ...	2,05,522	29,984	2,35,506	20,784	20,949	2,34,171	26,243	47,192	20·1
	Total for Hemavati ...	94,236	15,140	1,09,376	12,013	15,051	1,13,582	15,626	30,677	27·0
	Grand Total ...	2,99,758	45,124	3,44,882	32,797	36,000	3,47,753	41,869	77,869	23·5

BANGALORE,
August 1871.

No 480 I.

GOVERNMENT OF INDIA.

PUBLIC WORKS DEPARTMENT.

IRRIGATION.

FORT WILLIAM, DECEMBER 30, 1870.

Repair and Maintenance of Minor Irrigation Works in Mysore.

READ THE FOLLOWING DESPATCH:—

No. 77, DATED 30TH SEPTEMBER 1870.

From—The Secretary of State for India.
To—The Government of India.

I have received and considered in Council your Excellency's despatch, dated July 8th (No. 92), 1870, on the subject of the repair and maintenance of minor works of irrigation in Mysore.

2. There appears to be a unanimous opinion among all the officers who have been consulted on the subject, that the management of the thousands of small tanks throughout the country should be restored to the village communities.

3. But the Public Works Department, owing to stress of work, and to its machinery being inadequate to the task of keeping so large a number of small tanks in repair, has, during the last fourteen years, allowed many hundreds to fall into ruins; and it is of course necessary to restore them to working order, before transferring the responsibility of their maintenance to the village communities.

4. The Committee assembled by the Chief Commissioner of Mysore to consider the subject, recommended that this work should be carried out by the agency of revenue officers; but your Government has declined to sanction the proposed arrangement for the whole of Mysore, and has only sanctioned it as a tentative measure in one District, while a corresponding experiment is tried in another District as to the results of Public Works agency.

5. I am unable to concur in the propriety of trying further experiments of this nature, which must always involve delay, and which, in the present instance, are superfluous. The failure of the Public Works Department to keep the tanks in proper condition is universally admitted by the local officers, and the experiment of the results of its agency has been tried since 1856, and has failed. The recommendations of the Committee, strongly supported as they are by the Chief Commissioner, should be approved; and I, therefore, am of opinion that the Districts in Mysore should not be subjected to these experiments, but that a well considered scheme for the repair of small tanks, under the agency of the revenue officers, should be adopted throughout that State.

6. It is well worthy of the consideration of your Excellency's Government whether a similar course ought not to be adopted in other parts of India as regards small works of irrigation.

7. The restoration of the old system of making the people responsible for the maintenance of the smaller tanks is most desirable; but the regulations to be introduced for securing the co-operation of the cultivators, and sanctioning grants-in-aid, will be more properly considered in the Revenue Department.

ORDER.—Ordered, that a copy of this despatch be forwarded to the Chief Commissioner of Mysore for information, in continuation of Public Works Department No. 164 I., dated 28th April 1870, with the intimation that it is left to him to state whether or not he would, on the further expedience now obtained, continue the experiment as originally desired by the Government of India, or whether he desires to make over the whole of the duty to the revenue officers at once. An early reply is requested.

CAPTAIN, R. E.,
Asst. Secy. to the Govt. of India.

GOVERNMENT OF MYSORE

No. 67. I.

MYSORE CHIEF COMMISSIONER'S OFFICE,

PUBLIC WORKS DEPARTMENT.

From

The Secretary to the Chief Commissioner for the Government of the Territories of His Highness the Maharaja of Mysore.

To

The Secretary to the Government of India, Public Works Department, Calcutta.

Dated Bangalore, 4th March 1871.

SIR,

With reference to your communication as per margin, desiring that the Chief Commissioner should decide whether or not to continue the experiment originally ordered by the Government of India in paras 28, 29 of your No. 164. I, dated 28th April 1870, I have the honor, at Colonel Meade's request, to submit for the information and consideration of His Excellency in Council, that he has no desire to proceed with the experiment adverted to, with the object originally intended by the Government of India, though the progress already made in this matter will be fully turned to account in the restoration of the series of tanks selected for the purpose; but, as Her Majesty's Secretary of State has in his despatch strongly urged the necessity of giving early effect to the recommendation of the Irrigation Committee, and of calling in the aid of Revenue Officers, with a view to placing the Mysore tanks in a thoroughly efficient condition, and then handing them over for maintenance to the cultivators, the Chief Commissioner is of opinion, after much enquiry and consideration, that the measures requisite, in combination with other arrangements, to ensure these important objects being attained in an effective and satisfactory manner, demand an entire revision of the existing disposition of the Department of Public Works in the Province, and some radical changes in its organization, which will be submitted herewith. The whole subject of tank repairs being, I am to observe, an extremely complicated one, chiefly from the vast numbers of the works, (some 36,000 as lately registered), and considerable experience having further been gained since the formation of the Irrigation Branch under a special Superintending Engineer, Colonel Meade thinks it very desirable that in laying before His Excellency in Council his own matured views on this question, the fullest possible information thereon should at the same time be afforded. With this object the appended "Notes" as per margin, have been drawn up by the Chief and Superintending Engineers, explaining various points intimately connected with the subject, and showing the objects and reasons for this proposed change, and the involved cost.

Government of India, Public Works, Department No. 480, Irrigation.

Conveying despatch from Her Majesty's Secretary of State No. 77 of 30th September 1870.

No. I. On the condition of the Mysore tank systems under Native Rule.

No. II. On the repairs of the tanks from the year of the transfer 1831—32 to the formation of the D. P. W. in 1856.

No. III. On the repairs of the tanks between the formation of the Department in 1856 and the present time.

No. IV. On the duties of the D. P. W. when originally formed in 1856 as connected with tank and channel repairs.

No. V. On the changes effected in 1863 with reference to tank repairs.

No. VI. On the future establishment for roads and civil buildings.

No. VII. Superintending Engineer's Memorandum on the reorganization of the Irrigation Branch.

No. VIII. On the reorganization of the Accounts Branch.

No. IX. On the proposed reorganized strength of the Department establishment and its cost.

2. The repairs of the tank system under Native Governments are shown in these papers to have been effected in a very haphazard manner, and to afford no example for future working.

3. Under British Administration from 1831 to 1856 (when the Department of Public Works was formed) there was no radical change of system; all depended on the honesty and energy of the European Officers in charge of Divisions, and whatever advantages may at that period have resulted therefrom, it is clear that under the changed circumstances of the administration as now carried on, it would be impossible to return to the plan then followed, as indeed for many reasons it would be undesirable to do so. After 1856, with the formation of the Department of Public Works, Revenue Officers seem rather to have lost hold on the tanks, without the latter, however, being made over to the new Department; and it was only in 1863 that the anomaly thus occasioned was rectified by the Revenue Officers being specifically entrusted with the great majority of the repairs throughout the Province, as noted in the next para.

4. These arrangements have,—with certain modifications, occasioned (1) by the Chief Engineer in 1867 being made responsible by Government for tank as well as all other repairs, (2) by the subsequent formation in 1869 of a separate Irrigation Branch,—held good up to the present time; and the Revenue Officers have substantially retained the position assigned to them in 1863, *viz.*, the full power to deal with all minor repairs of tanks, up to the limit of Rs. 500 on each work.

5. More system has been gradually introduced in reference to the larger class of these works, and on the whole, some improvement in their treatment is observable; but it must at once be said that the repairs generally have never yet been effected in a manner compatible with the due requirements of the tank systems, or in a manner which would admit of the works being, as now contemplated, handed over in a proper condition to the cultivators for perpetual up-keep.

6. This latter is a measure which requires in the first place a thorough comprehension of the nature of the several series of reservoirs throughout the Province, *and the interdependence of all the works in each chain or series.*

7. The Superintending Engineer for Irrigation, Major Johnson, has gone so thoroughly into this part of the * subject, that Colonel Meade deems it only necessary to say that he entirely concurs with the conclusions arrived at by that Officer.

* In No. VII of the appended Notes.

8. He proposes to deal with all the tanks (excepting those in the Kadur and Shimoga ranges for certain reasons † assigned) in such a manner as to be enabled to bring them up to standard in about 12 years, working them up series by series, and handing them over as completed to the cultivators.

9. The Superintending Engineer would in fact undertake, through the new branch of the Department which it is proposed to create for specially dealing with this class of work, to say in all cases what should be done with each series, specifically laying down, after due enquiry, the work to be executed in the case of each individual tank of a series, and then utilizing to the utmost extent the Revenue Department under its own proper officers in carrying the work, so designed, into execution.

10. The Revenue Department will moreover continue to be entrusted, as at present, with the duty of executing the requisite repairs to the remaining tanks in the Province, until they can be taken up by the Irrigation Department in due course.

11. The arrangements under which the works thus brought up to standard are to be maintained in thorough efficiency by the cultivators, must form a subject for future consideration; meanwhile, however, in order to place the requisite means, with the above object, at the disposal of the Superintending Engineer, without unduly adding to the establishment charge for the Department of Public Works, extensive and radical changes have become imperative under the headings "Roads and Civil Buildings" and "Accounts."

12. The Chief Engineer has shown how these changes may be effected if, as regards the first, the "Roads and Buildings" Establishment be freed from the present duties in connection with the tanks; and, as regards the second, if instead of continuing the present plan of separate compilation in each Executive Engineer's Office, the work be centralized in the Controller's Office. The details of these several arrangements are given in the attached Notes, and I am to add that the Chief Commissioner entirely approves of the changes proposed therein, which, without diminishing efficiency either in the executive or accounts, are calculated to aid in furnishing the required means for dealing effectively, and once for all, with the tank system of this Province.

In Nos. VI and VIII of the appended Notes.

† *Vide* para 11 of his Notes.

13. The small amount of excess in the yearly cost (Rs. 20,000) of establishment involved in these changes, has only been attained by the most careful lopping of every superfluous item and by such thorough and well considered re-adjustment of duties as the Chief Commissioner trusts will commend the scheme for early sanction by His Lordship in Council.

14. I am to add that Colonel Meade is fully alive to the necessity of preserving rigidly the checks on expenditure established by the Government of India; and he has reason to believe that no essential feature in the account rules has been lost sight of in the proposals now made, notwithstanding the extensive modifications in mere routine matters contemplated therein. He would therefore venture to express his earnest hope that no slight objection to the changes in account may be allowed to interfere with the reorganization of the Department, upon which, if the views formed by him of this question are approved by His Excellency in Council, so much of the vital interest of the Province may be said to depend.

15. At first sight it may possibly appear that the early expenditure proposed for tank repairs is large, but bearing in mind (1) the ultimate object of that outlay, namely, to free the State in future from all but the trifling expenditure that will be required on the up-keep of the masonry outlets and waste weirs of tanks (which will have to be provided permanently by Government, aided probably by an annual allotment from the Irrigation cess of one anna in the rupee of assessment leviable from all wet lands in Mysore under the Survey Settlement Rules), and (2) that it is only of a temporary character, and will almost wholly cease on the completion of the works, the Chief Commissioner cannot but believe that the object to be attained is well worth the annual cost. In fact, viewed in its true bearings, the entire outlay involved (say even 60 or 70 lakhs) may be described as being in many respects analogous to that now incurred, under the rules laid down by the Government of India, out of loan for remunerative works.

16. Again assuming the expenditure during the Raja's administration (from 1812 to 1831) to have been about 15 lakhs, it would appear from the information available, that the total expenditure on the repairs of tanks in Mysore since the commencement of the present century, has not been less than 75 lakhs. Of this it would be fair to allow 15 lakhs, which, under any circumstances, would have devolved on Government for the repair of the masonry works connected with the tanks, leaving 60 lakhs laid out in a manner which, whatever else may have been the result, has nowise secured the safety of a single series of tanks in the country.

17. Viewed, therefore, as a directly remunerative outlay on one side, and on the other as stopping for the future in great measure profitless expenditure, hitherto yearly incurred under this head, the Chief Commissioner is of opinion that, taken even on its lowest grounds, the scheme now projected strongly commends itself for adoption, and this too without taking into account the great increase of wet cultivation, with the corresponding improvement of the revenue, which may, in event of these proposals being adopted with certainly, be counted on.

18. As regards the cost of establishment required for this new irrigation branch, the Superintending Engineer has shown that the charge for getting up the tank projects will not, all included, be less at first than probably 50 per cent on the actual expenditure (though with time it will decrease); but, as the entire value of the scheme and the attainment of the objects in view depend wholly upon the intelligent professional projection of the work to be done in the case of each tank, the Chief Commissioner respectfully submits his earnest hope that it will not be deemed necessary to apply to so exceptional a case the percentage test of establishment charges derived from the performance of the ordinary duties of the Department.

19. The general and detailed surveys, plans and sections of all the reservoirs in the country, which must be prepard by the surveyors and form the ground-work of all the proposed operations, will become when lithographed, after the completion of the work on each series of tanks, probably the most valuable record the local Administration can possess, certainly in no sense of less importance than the maps of the Revenue Survey, with which they are intimately connected.

20. The important advantages to the country generally that may be looked for from the spread of orderly habits amongst the general population, which will doubtless be one of the results of the enforcement of the cultivators' duties in regard to the conservancy of the irrigation works, on which their welfare and prosperity so much depend, need not be dwelt on here. The main objects of the despatch of Her Majesty's Secretary of State, *viz.*, (1) giving full effect to the recommendations of the Irrigation Committee, and (2) bringing to bear in the

most useful manner the whole power of the Revenue Officers in carrying out the measures contemplated in those recommendations, will be duly met by the adoption of the proposals which are now made after the fullest consideration with the Chief and the Superintending Engineer, and with their entire concurrence. I am in conclusion to submit the respectful expression ofColonel Meade's earnest and confident hope that these proposals may be favorably considered by His Excellency in Council.

I have, &c.,
R. H. SANKEY, *Lieut.-Col., R. E.,*
Secretary to the Chief Commr. of Mysore, P.W.D.

Note No. 1.

The condition of the Mysore Tank Systems under Native Rule.

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1. There is so much that is unreliable in all the information available on this point, that we must accept the unsupported statement made now-a-days with great reserve.

2. Major Wilks in his report of the 5th December 1804 observes (para 160) that the tanks " had been much neglected during the latter years of Tippu Sultan's Government, " and Dr. Buchanan in his Work on Mysore not only confirms this but shows that in one particular instance (namely that of the Moti Talav, one of the largest reservoirs in the Province) he wantonly cut through the tank bund and utterly destroyed the work ; but it is difficult to believe that either Hyder or the previous Hindu rulers systematically neglected or wantonly injured works on which so much of the revenue depended. Information on this point is difficult, if not impossible, to obtain.

3. One or two facts may, however, serve to indicate in a general way that under the previous Native Governments matters could not have been in a satisfactory condition. The Mysore Tank Systems I have shown in a previous report* to have grown simply with the natural increase of population, the storage of water commencing all along the upper sources of the several streams creeping step by step down to the main streams themselves, and eventually ponding up in many cases the whole rain-fall over large areas during ordinary years.

*No. 3828—507 of the 19th November 1866.

4. Now as we find on examining the upper works of the several series of tanks that the great majority (locally called "Kattes") and some even of the lower and larger reservoirs, have no, or very inadequate, provision for the escape of surplus water, it is sufficiently evident that the lower tanks in the series could never have been secure from the sudden bursting of those above. In fact no series of tanks in the country is, or ever could have for this reason been, absolutely safe in case of exceptionally heavy rainy seasons.

5. Again at the end of the largest series of tanks are now to be seen either commencements of large terminal reservoirs or ones that have entirely failed shortly after completion. Two remarkable instances of works that in this manner never reached completion are to be seen, one on the drainage of the Arkavati river a few miles west of Bangalore, the other known as the Sulikere tank on the stream known as the Hebhalla, south-west of Maddur. Of great works which failed after completion, the most remarkable example is that of the Madak tank near Shikarpur, the bund of which is no less than 200 feet high and 1,000 feet in thickness at base.

6. It will probably be sufficiently evident from the above facts that under the previous Native Governments, first, the several series of tanks could never have been in a safe condition, and secondly, that at probably some distant date the whole of the systems had reached their ultimate extension with the knowledge then possessed.

7. The batayi system of cultivation (by which the raiyat shares produce equally with Government), which prevailed to a great extent throughout the country, must certainly have been unfavorable to the proper up-keep of all the tanks. By this system it is obviously the interest of the raiyat to cultivate only the very best patches of ground ; and as the number of tanks increased it is only fair to suppose that several

of those with poor soil under them would in time have failed to attract cultivators, and become utterly neglected. It can hardly, I think, be doubted that this was actually the case.

8. Again, the plan of giving a man who repaired a tank a certain portion of the irrigated land free of rent, [known as Kodagi Inam] on condition of perpetual up-keep, although probably beneficial in some respects, must, as we find by actual experience, have proved eventually extremely injurious to the tank systems. Whatever energy the original repairer may have possessed, this as a rule evaporated with his heirs in these service Inams. In fact it is not too much to say that what was no doubt intended as a benefit to the State, resulted in certain individuals acquiring an almost absolute right to keep large numbers of tanks throughout the country in such disrepair as to endanger the safety of almost every series throughout the Province.

9. The institution of village headmen in those days no doubt helped to counteract the tendency to allow all works to fall into disrepair, as the revenue officials had through them a ready means of compelling the cultivators when they wished to execute at least such earthwork as might be considered necessary to the tank bunds; but action of this kind must in its nature have been spasmodic, and the system itself being liable to the greatest abuses, could not have sufficed to ensure the proper up-keep of the works.

10. Taking then all the above circumstances into account, as well as the generally known tendencies of Native Governments, I think the probabilities are, that nothing very systematic was ever undertaken in regard to tank repairs in Mysore before the beginning of the present century. And at that time we know that owing in great measure to the character of Tippu Sultan and to the ravages of war (especially the perpetually recurring invasions of the Mahrattas) nothing could well be more deplorable than the condition of the tanks.

11. The next period of native management of the tanks is that during the administration of the Dewan Purnaiya from A. D. 1800 to 1810, and here for the first time we have figures to deal with. These, it must be acknowledged, are not of the most satisfactory or complete kind, but such as they are will appear from the attached Statement A,—obligingly compiled for me by the Deputy Accountant General from the old records in the Chief Commissioner's Office.

12. From this it would appear that out of an average revenue of Rs. 84,34,800, Purnaiya during his eleven years' administration spent annually Rs. 2,86,154 or 3·39 per cent of the gross ncome on Irrigation Works generally.

13. The work called Purnaiya's Nalla must be excluded from this, as it is expressly stated by Major Wilks, the then Acting Resident, that this work which, it appears cost Rs. 17,58,949 had "not cultivation for its primary object." It was a religious idea mainly for "introducing into a "Hindu Town (Mysore or perhaps more correctly Nanjangud) the holy stream of "the Cauvery," and failed in its object. Rs. 2,86,154 therefore covers all irrigation outlay throughout the Province during these years, and necessarily includes the expenditure on new works on both channels and anikats, as well as repairs of these works and the tanks.

Letter to Chief Secretary to Madras Government of 27th March 1807.

14. From the available information, it would indeed appear that a very considerable proportion of the money went in the repair and restoration of river works and channels in Ashtagram, to such an extent that the Madras Government early in 1807 represented the injurious effects to the Company's territories of Purnaiya's exertions in this respect. Taking into account the large deductions which must therefore be made for river works, it would I think be wrong to conclude that perhaps more than 1½ or 1¾ lakhs had been annually devoted by him exclusively to the repairs of tanks.

15. It is true that Major Wilks had in a previous report stated from the experience of the four years 1799-1800 to 1802-3, that "the average expenses of tanks ought not to be taken at less than Rs. 3,75,000" per annum, and this has been subsequently adduced as proof of the sums then devoted to this species of work. I cannot however but think, that by "Tanks" he simply meant irrigation works generally, both original and repairs, and consequently that there has been a misapprehension from the expression employed. Even the much lower figure of 1½ or 1¾ lakhs would, however, if judged merely by the relative prices of labor in those and in our days, be a very large sum indeed, and would probably represent an amount of work which,

if carried out under precisely the same conditions, would now be equivalent to 3 or 3½ lakhs.

16. On one point, however, and that a most essential one, information entirely fails—Did this represent genuine outlay under proper direction? I confess that judging by the ignorance shown in both the design and the execution of the work known as "Purnaiya's Nala," there would appear to be little chance that the money was properly laid out, although at the same time there is most abundant evidence that the Dewan, according to his lights, employe the revenues in the most open handed and judicious manner.

17. On the whole, no safe inferences can be drawn from this period, excepting of such a general nature as to be of no guide towards the future management of the tank systems.

18. The concluding period of native management of the Mysore tank system embraced the period under the direct administration of the late Maharaja, *i. e.*, from 1812 to 1831. The accounts during this period show receipts under one or two separate heads of revenue; but disbursements of all kinds are so lumped together as to render the search after outlay on irrigation works quite hopeless.

19. All that can be done is to accept such general statements as are forthcoming on the state of the tanks, &c., on the resumption of the Government in 1831, and certainly these so far as they go are most unsatisfactory. The irrigation works as years advanced appear to have been more and more allowed to fall into decay, till at length on the transfer they were generally found to be in the most deplorable condition.

20. It would be profitless to rake up the shortcomings of those days, or to seek for enlightenment from them as to our future proceedings. All in fact is desert from Dan to Beersheba.

21. I am aware that many people believe the native management of the irrigation works of the country to have been, if not scientific, at least practical and energetic; that raiyats were held strictly to their duties in effecting repairs, &c., : but I must frankly confess that there appears to be no kind of proof that such was the case. There was now and then no doubt a good deal of spasmodic display, and at times an enlightened ruler like the Dewan Purnaiya may have galvanised the various establishments into vigorous action; but as to any steady systematic work, by which alone widely extended and interdependent works like those of the several Mysore tank series can be kept in efficiency, it seems to me in vain to look for such in the past history of the country.

R. H. S.

A

Statement showing in detail the Expenditure on Public Works from the year Sidharti 1799-1800 *to Shukla* 1811-1812.

Years.		Revenue.			Expenditure.			Irrigation. Work.			Building and repairing Forts, &c.			The Wellesley Bridge over the Cauvery, &c.			Purnaiya's Nalla.			Roads.			Travellers' Bungalows, &c.			Matts, Chattrams and Devasthans.			Taluk Cutcherries, &c.			Webb's Monument Pillar near French Rocks.			Total.		
		Rs.	A	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Sidharthi	1799—800	71,49,481	3	8	65,50,899	14	4	3,86,670	8	9	6,750	12	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3,93,421	5	0
Raudri	1800—801	76,63,641	4	8	67,70,751	4	8	4,48,946	0	7	1,24,660	15	2	...	...	...	...	...	...	...	...	...	6,892	12	10	...	...	...	...	...	...	...	...	...	5,80,499	12	7
Durmathi	1801—802	80,01,889	3	3	71,87,787	8	9	2,78,197	8	5	2,12,829	5	0	...	...	...	...	...	...	...	...	...	1,953	7	3	5,002	9	11	4,675	7	10	...	...	...	5,62,658	6	5
Dundubhi	1802—803	75,95,009	6	3	74,78,678	2	7	2,17,762	14	7	1,85,374	1	9	1,95,333	12	0	...	...	...	...	...	...	36,429	7	2	10,488	2	0	5,395	12	6	...	...	...	6,50,784	2	4
Rudhrodgari	1803—804	79,86,342	2	7	77,80,123	13	7	1,90,836	5	10	1,87,723	10	3	2,18,909	1	6	...	...	...	...	...	...	6,690	14	7	...	...	...	1,890	14	7	...	...	...	6,06,050	14	7
Raktakshi	1804—805	87,73,192	14	0	83,47,182	5	2	3,69,355	10	3	2,41,307	3	3	1,12,655	2	1	1,98,639	2	1	37,604	10	7	64,170	0	5	...	...	...	13,141	6	1	13,280	11	8	10,50,153	14	4
Krodhana	1805—806	90,25,537	5	6	85,31,406	7	7	3,36,018	6	9	1,85,649	11	11	...	...	...	6,15,257	8	6	8,593	2	8	38,362	7	5	9,160	15	2	30,682	1	9	33,147	3	2	12,56,871	9	4
Akshaya	1806—807	88,40,210	6	7	85,36,778	11	7	2,76,363	10	3	1,38,265	9	7	...	...	...	4,82,469	10	10	7,272	11	8	33,376	4	8	...	...	...	31,127	4	5	28,381	6	0	9,97,256	9	5
Prabhava	1807—808	93,68,581	1	3	88,28,564	11	2	3,00,742	15	9	1,97,733	12	10	26,032	11	8	4,62,583	9	1	6,580	8	2	1,01,764	6	10	1,20,758	6	5	24,885	1	2	...	...	...	1,24,181	7	11
Vibhava	1808—809	94,54,462	1	0	86,55,466	0	10	1,89,409	11	10	816	6	9	124	14	3	...	...	...	2,287	15	7	31,710	4	9	24,207	4	9	2,241	10	9	...	...	...	2,50,798	4	8
Shukla	1809—810	89,24,463	0	11	88,10,425	10	7	1,53,389	12	8	754	13	6	2,823	6	7	...	...	...	5,423	6	7	10,964	13	4	18,187	1	3	8,191	1	7	...	...	...	1,99,734	7	6
		9,27,82,810	1	8	8,74,78,064	10	10	31,47,693	9	8	14,81,866	6	3	5,55,879	0	1	17,58,949	14	6	67,762	7	3	3,32,314	15	3	1,87,804	7	6	1,22,230	12	8	74,809	4	10	66,12,410	14	[illegible]
	Averages...	84,34,800	0	0	79,52,551	0	0	2,86,154	0	0	1,34,715	0	0																									

Note No. 2.

Repair of the Tanks from the year of the Transfer, 1831-32, to the formation of the Department Public Works in 1855-56.

1. The annexed statement **B**, compiled by the Deputy Accountant General from the records in the Chief Commissioner's Office, shows that during this period, out of Rs 30,20,334 spent generally on irrigation works, Rs. 19,97,291 were laid out on tanks, probably all on repairs. In round numbers during these 25 years. 20 lakhs of rupees were laid out in this manner, or say Rs. 80,000 per annum, being a charge of 1·1 per cent on the average annual revenue of about 72⅔ lakhs.

2. Including the charge for channels the annual outlay was about Rs. 1,21,000, or 1·66 per cent on the revenue.

3. These figures in themselves teach little. The yearly outlay was not half that during Purnaiya's time, and if the difference of labor rate be also taken into account, the comparison on this ground, if taken alone, must be unfavorable.

4. Purnaiya moreover could hardly have received over the tanks after Tippu's mi-government in a worse condition than did the British Government in 1831, as nothing could have well been more deplorable than their state then, when it is said that for some years previous to the transfer " all improvement was stopped by " the reckless extravagance of the Darbar and the grasping extortion of the Revenue " servants "

5. It can hardly be doubted however that the probabilities are in favor of the smaller outlay going relatively further " *cœteris paribus* " under British rule, if the personal character of the Officers be taken into account.

6. Still as may be seen from the accounts of Officers then engaged in the Administration, and notably that given by the Civil Superintendent of the Chitaldroog Division, things were not in a very satisfactory state even so late as 1855.

Captain Dobbs' No. 85 of the 15th March 1855.

He observes " The Superintendent occupied by more pressing claims on his time and "attention in the Revenue and Police Departments, could not pay that attention to the "expenditure on public works which was desirable ; * * * the requiste amount of "attention for the due preservation and improvement of existing works has been ut-"terly impossible, in consequence of which the beds of many tanks have so silted up "as not to be above half their proper depth and the bunds of a large majority are in a "weak and unsatisfactory state, both from the falling down of the stone facing, and "the wearing away of the earth, rendering them very liable to be breached by any "unusual pressure. * * * It is not too much to say that 20 lakhs of rupees will "yet have to be expended in works of improvement and restoration alone before we "can see the (Chitaldroog) Division in a state which we may fairly consider to be "complete."

7. Further on, the Superintendent showed that between 1845-46 and 1853-54, Rs. 55,563 had annually been expended on tank repair in the Chitaldroog Division.

8. The Superintendent of Maramat (which was the title then given to the Chief Engineer in Mysore) remarked in his report of the 16th June 1855. No. 10, that the state of the tanks "may be considered as in fair working order. Tank bunds, "which in the disturbances previous to the transfer had been broken by accident or "design, and suffered to remain useless, have nearly all been restored, and annual "repairs have in general more than compensated for annual decay; but many of these "tanks have now arrived at a stage when very extensive improvements have become "necessary, * * * * the tanks most of them do not hold so much water as they "were capable of holding, and they will continue to decline in capacity on the present "plan, unless some extraordinary efforts are made to meet the changes of years. "

9. I think the improved condition of the tanks as described in the first portion of this statement, must have related generally to the larger reservoirs throughout the Province, on which the Engineering efforts and available means were for the most part concentrated, and as would appear with good results ; but weighing the whole evidence now before us, there can be little doubt that matters were not in a satisfactory condition at this time.

10. The Superintendent of Nagar (Mr. Stokes) in his report of the 19th May 1838, gives only 3,576 large tanks in repair out of 6,759 in that Division, and by the report of his successor, the system followed in 1854 does not appear to have been calculated to produce good results. He observes "It has been the custom "of this Division to give over most of the repairs of tanks and works of irrigation to "the Amildars to perform, who, already overpowered with their other duties, have "entrusted them to Shekdars, who in turn hand them over to the Patels, and thus "the work is improperly performed, and great loss incurred."

Captain Porter's No. 294 of the 22nd November 1854.

11. As the good and evil results of effecting tank repairs on the system then adopted is perhaps best illustrated by the working of the Chitaldroog Division under Captain (now Major-General) Dobbs, it may be mentioned that late in 1858, disastrous floods destroyed large numbers of the tanks and threatened famine. In the Sira Taluk alone, it is said that 85 out of 147 tanks were so breached. The Superintendent taking up the matter with his usual energy, and being supplied with the requisite funds, was enabled to report in the following year, that if the early rains did not fail he fully anticipated that the "whole of the exceptional expenditure would be covered by the Vaisakha crop." By his latter expression was probably only meant, that there would be no falling off from the ordinary revenue of previous years, not that new land would be taken up over and above the previous average sufficient to cover the exceptional outlay. Even, however, in this limited sense, the results would, if it had been realized, have been sufficiently favorable to prove incontestably the value of personal influence such as Captain Dobbs' under these trying circumstances was enabled to exercise; but at the same time, the facts also show the inapplicability of the system as a model for adoption under the altered circumstances of the Administration. *

1st.—The tanks at the time of the catastrophy of 1858 had been nearly 30 years under the uncontrolled management of the Revenue Officers, considerable sums of money had been expended, and all that personal influence and example could effect had been brought to bear; yet the moment the trial came, the tanks, as shown, breached wholesale; in other words, the system was not calculated to stand the very test which it was most essential it should stand, *viz.*, that of extraordinary flood.

2nd.—The key-stone of the system then obtaining was the personal influence of the Civil Superintendent brought to bear by constant movement throughout his Division. As this Officer himself subsequently expressed himself on this subject the Civil Officer "should be constantly in the saddle." Now whatever may have been the value of this element (and this is undeniable) at an early stage of the administration in this Province, I believe that even Revenue Officers themselves admit the impossibility of regaining it. The Deputy Superintendent in charge of a District has, in fact, work which absolutely prevents his being constantly in the saddle, and Amildars are similarly so overwhelmed with the variety of duties that have been thrown upon them, that they can in no way give that active attention to tank repairs which they once did.

12. I think it may fairly be claimed for the system which prevailed from 1831 to 1856 (when the Department Public Works was formed) that there was a much more honest endeavour to do what was right in regard to tank repairs, than could possibly have existed under any of the previous Native Governments; but as before shown, the sums expended were by no means large, and as a fact the state of the whole tank system at the close of the period was unsatisfactory. There was no improvement on the old native method of working. No idea, for instance, was entertained that the tanks were, as a rule, interdependent, and not isolated works: great efforts were made to restore some individually large work; but the condition or claims of the upper tanks, upon which the safety of the whole rested, were never apparently taken into consideration.

13. I have no wish, in making these observations to attribute blame to the Revenue Officers; as the want of system complained of has only of late years attracted attention; and indeed it may be said that, only now for the first time are such arrangements about to be made, as it is hoped will put an end to this want of system.

R. H. S.

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* Note.—It may be said that for two years previously, the D. P. W. had stepped in; even were this the case, I do not consider that it would in any way invalidate the argument, as this time would, in itself certainly not have sufficed to reduce the standard of safety of the whole system in any appreciable degree but as I have shown in another note the D. P. W. did not take over the tanks in 1856.

B

Statement showing Details of Expenditure on Public Works from the year Khara (1831-32) to Rakshasa 1855-56.

No.	Year.	Actual Collection.			Total Disbursements.			Public Works Charges. Establishment.			Irrigation Works. Tanks.			Irrigation Works. Channels.			Irrigation Works. Total.			Communications, Roads, Bridges.			Civil Building.			Total.		
		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1	Khara ... ... 1831—32	43,97,035	4	0	43,07,606	1	2	...	...	...	10,203	12	8	20,382	4	2	30,586	0	10	2,978	4	4	939	7	8	34,503	12	10
2	Nandana ... ... 1832—33	55,56,337	8	9	57,31,482	13	3	...	...	...	22,557	8	2	30,495	15	1	53,053	7	3	29	5	5	1,675	14	1	54,758	10	9
3	Vijaya ... ... 1833—34	58,25,756	8	0	62,24,146	10	1	...	...	...	33,793	8	2	25,589	14	1	59,383	6	3	437	2	6	10,793	1	8	70,613	10	5
4	Jaya ... ... 1834—35	67,70,277	3	6	64,78,772	6	4	5,442	11	6	25,462	11	1	42,587	1	10	68,049	12	11	641	8	8	7,118	7	5	81,252	8	6
5	Manmatha ... ... 1835—36	76,87,751	9	8	87,11,649	12	2	6,122	7	7	30,297	13	2	33,090	13	6	63,388	10	8	3,420	12	1	7,293	13	2	80,225	11	6
6	Durmukhi ... ... 1836—37	71,13,701	13	7	73,75,385	3	7	10,183	6	1	40,950	6	7	49,918	3	0	90,868	9	7	7,883	7	5	14,776	4	10	1,23,711	11	11
7	Hevilambi ... ... 1837—38	69,30,581	8	6	72,82,088	14	4	10,563	1	4	68,158	9	4	40,933	0	7	1,09,091	9	11	13,796	15	3	12,811	3	2	1,46,262	13	8
8	Vilambi ... ... 1838—39	71,91,818	7	0	68,02,324	9	10	10,585	14	9	1,01,563	14	9	35,061	0	6	1,36,624	15	3	15,808	2	3	10,814	9	6	1,73,833	9	9
9	Vikari ... ... 1839—40	77,97,422	3	5	74,01,320	7	10	12,259	8	8	92,624	10	9	46,376	12	9	1,39,001	7	6	24,598	4	8	11,553	10	9	1,87,412	15	7
10	Sarvari ... ... 1840—41	76,48,125	7	5	72,53,201	3	9	14,148	11	0	50,780	4	2	42,309	6	2	93,089	10	4	29,031	13	6	19,273	10	4	1,55,543	13	2
11	Plava ... ... 1841—42	75,66,381	6	5	76,51,798	7	7	16,272	12	3	82,558	2	4	52,966	12	7	1,35,524	14	11	85,886	2	5	17,617	7	4	2,55,301	4	11
12	Subhakrutu .. 1842—43	75,64,855	1	5	71,86,104	5	0	19,800	1	4	71,534	2	7	57,868	7	2	1,29,402	9	9	1,07,572	1	7	14,495	9	11	2,71,270	6	7
13	Sobhakrutu ... 1843—44	72,59,119	7	1	68,03,054	9	3	18,464	0	2	62,531	7	5	43,159	10	7	1,05,691	2	0	1,30,470	4	3	13,341	11	8	2,67,967	2	1
14	Krodhi ... ... 1844—45	72,89,665	10	0	69,37,865	0	3	19,338	7	0	66,678	9	5	67,959	3	2	1,34,637	12	7	1,77,919	3	5	19,636	11	5	3,51,532	2	5
15	Vishvavasu ... ... 1845—46	71,00,370	3	7	72,14,735	14	3	21,099	10	3	72,417	14	9	56,393	15	6	1,28,811	14	3	1,63,791	0	3	27,962	2	10	3,41,664	11	7
16	Parabhava ... ... 1846—47	76,04,072	14	4	75,43,527	12	4	21,041	0	11	76,028	9	9	24,876	0	10	1,00,904	10	7	1,94,647	9	5	14,568	15	8	3,31,162	4	7
17	Plavanga ... .. 1847—48	79,26,751	6	11	85,66,223	13	3	24,073	10	0	89,947	0	8	24,467	2	10	1,14,414	3	6	1,98,624	4	2	26,306	8	8	3,63,418	10	4
18	Kilaka ... ... 1848—49	80,08,339	6	8	85,58,682	0	3	24,317	11	1	86,411	14	10	26,189	2	9	1,12,601	1	7	1,46,243	5	4	23,298	15	6	3,06,461	1	6
19	Saumya ... ... 1849—50	80,03,953	11	0	76,00,169	3	3	30,249	2	9	1,08,539	1	3	33,102	8	4	1,41,641	9	7	1,84,552	13	7	24,479	5	11	93,80,922	15	10
20	Sadharana ... ... 1850—51	78,37,219	14	0	74,68,086	13	10	31,764	7	5	1,15,320	8	0	48,025	8	2	1,63,346	0	2	1,95,650	1	6	26,026	14	11	4,16,787	8	0
21	Virodhikrutu ... 1851—52	80,18,977	7	3	75,47,351	14	3	33,924	9	10	1,09,884	15	9	39,497	7	9	1,49,382	7	6	2,51,143	9	6	30,238	11	2	4,64,689	6	0
22	Paridhavi ... .. 1852—53	78,67,983	3	10	79,71,123	6	8	35,821	0	4	98,452	0	9	29,238	6	5	1,27,690	7	2	2,43,367	14	6	55,425	8	0	4,62,304	14	0
23	Pramadicha ... 1853—54	82,07,926	11	9	77,02,871	8	7	42,329	4	2	1,37,094	1	8	50,168	8	6	1,87,262	10	2	2,44,379	3	6	53,966	4	6	5,27,937	6	4
24	Ananda ... ... 1854—55	78,62,386	2	5	81,44,093	7	5	58,098	0	10	1,90,037	11	1	63,225	10	9	2,53,263	5	10	2,46,075	7	8	55,945	9	1	6,12,482	7	5
25	Rakshasa ... ... 1855—56	66,59,049	12	8	64,75,384	12	0	62,742	5	3	1,53,461	15	9	39,159	13	1	1,92,621	12	10	2,07,811	14	8	97,376	11	3	5,61,052	12	0
	Total.....	18,16,95,860	1	2	18,09,39,051	2	6	5,28,642	0	6	19,97,291	6	10	10,23,042	14	1	30,20,334	4	11	28,76,760	11	10	5,97,337	6	5	70,23,074	7	8
	Average	72,67,834	6	5	72,37,562	0	8	24,029	10	11	79,891	10	0	40,921	11	5	1,20,813	5	11	1,15,070	6	10	23,893	7	11	2,80,922	15	8

Note No. 3

Repairs of the Tanks between the formation of the D. P. W. in 1856 and the present time.

1. The general connection of the Public Works Department with the irrigation works of Mysore has been discussed in two separate Notes in which it has been shown, that, (1) the tanks and channels were never formally made over to this Department, and that it was only by a species of lapse that it became connected in its duties with certain special irrigation works; (2) that from 1863 to 1867, the Revenue Officers were formally recognized as in charge of all minor repairs individually under Rs. 500, the Commissioner having it in his power as regarded works above this limit, to give the work for execution either to the Deparment, Public Works, or the Revenue Officers; (3) that from 1867 the Chief Engineer was made responsible for all repairs while the Revenue Officers retained their previous position with reference to the minor repairs; (4) that discussions arose out of the anomalies thus created, which ended in the formation of a purely Irrigation Branch of the Department in 1869.

2. As regards the expenditure which took place on irrigation works since 1856, it will be observed (Statement C) that during these 14 years, Rs. 7,30,675, or at the rate of Rs. 52,191 per annum, has been laid out on original irrigation works, by which must be understood chiefly, if not entirely, the re-construction of old anikats on modern principles, and the extension and improvement of channels. Very little indeed of this amount has been absorbed by the tanks, the estimates for which even when including improvements (as is frequently the case) have been generally classed as repairs.

3. The table shows Rs. 26,31,930 or Rs. 1,87,995 to have been spent annually on agricultural repairs, of which it will be fair to assign 1½ lakhs to tanks, the rest (some Rs. 38,000 per annum) to channels. It would require a very tedious analysis of the accounts to separate all these charges accurately, indeed it would be almost impossible to do so for the first few years, but I think the relative sums I have assigned may be taken as very nearly the truth.

4. In instituting any comparison with previous outlay on tank repairs under Native or British rule, the establishment charge constitutes a difficulty. Under the Native Governments the salaries of all Revenue officials who supervised the work (such charges in fact as we class under "Direction" and "Construction") were no doubt a revenue or general establishment charge against the State, and this system was repeated between 1831 and 1856, the Mutsaddi, and perhaps a Chokidar or two, alone being directly debited to the work. Although therefore, in strictly estimating what irrigation works had cost under the Department, Public, Works, it would be right to include a due proportion of establishment charge, yet for mere purpose of comparison with the previous systems, it would be hardly fair to do so.

5. Taken in this sense, the average annual outlay on repairs and original irrigation works, Rs. 2,40,186 will be found in actual money to be singularly close on the expenditure during Purnaiya's time; though of course it must be at once admitted that considering the differences of wages, the expenditure under the Dewan's administration would, if equally well and honestly laid out, represent at least double the quantity of work.

6. The facts are wanting for any fair comparison on general grounds, but I think it may be fairly claimed for this the last phase of the tank repairs, that in one respect at least, an advance has been made which, all things considered, should compensate for much that might otherwise be considered unsatisfactory. Modern scientific principles have been applied to the re-construction and improvement of anikats and channels, also to individually large reservoirs, as I have already pointed out at length in my Irrigation Report of the 19th November 1866. But especially with reference to tank repairs, the principle upon which such must rest in future has been fully recognized. I allude to the interdependence of these works. The fact that nearly all tanks existed in series (first I believe brought to notice in the above report) was made the basis of our future working in my No. 661—63 of the 4th February 1868, and the Irrigation Committee of 1869, accepting this, classified the works accordingly, (see their Resolutions, paras 3,10 and 65). The recognition of this principle should in itself insure an improvement in the future management of the tank system, which was before impossible.

7. In another Note, I have shown the vast numbers of individual works dealt with throughout the Province of late years since 1863. Probably not less than 5,000 tanks have been repaired, or nearly one-fifth of the whole number now yielding revenue; and although little, if any, of the work has been done on the systematic plan now recommended, and which alone can give successful results, I think it may be fairly claimed that both Departments have worked with good intent, and further that spite of all drawbacks, the tanks are now in actually better order than they ever were before.

8. It is of course quite impossible to prove this, but if we accept the gradual ncrease of area under wet cultivation, as a fair indication that the works on which this depends are able to store more water than collectively they did at a previous period, we have some such proof at hand; and so far as I can personally judge, I believe it to be a sufficiently reliable one. The returns show the following quinquennial averages of land under wet and garden cultivation in the Province.—

Years.		Average annual acreage under wet and garden cultivation.	Years.		Average annual acreage under wet and garden cultivation.
From	To		From	To	
1837-38	1841-42	341,030	1852-53	1856-57	432,062
1842-43	1846-47	369,952	1857-58	1861-62	433,808
1847-48	1851-52	417,586	1862-63	1866-67	507,345

Until the completion of the Revenue Survey, absolute statements of areas cultivated must necessarily be taken with considerable reserve; but as simply indicating the relative areas at different periods, I presume that the objection would not be so strongly insisted on; and in this view the above statement has special value in testing the condition of the irrigation works and should not be lightly ignored.

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Years.		Average annual acreage under wet and garden cultivation.	Years.		Average annual acreage under wet and garden cultivation.
From	To		From	To	
1867-6	1871-72	535,711	1872-73	1876-77	629,484

C.

Expenditure on Public Works during the last fourteen years.

Years.	Original Works.						Repairs.						Establishment.	Tools and Plant.	Profit and Loss.	Total Outlay.
	Military.	Civil Buildings.	Agricultural.	Communications.	Miscellaneous Public Improvements.	Total.	Military.	Civil Buildings.	Agricultural.	Communications.	Miscellaneous Public Improvements.	Total.				
1856-57 ...	...	87,890	11,033	1,97,888	626	2,97,437	...	30,021	2,16,949	1,22,792	...	3,69,762	2,46,718	...	...	9,13,917
1857-58 ...	...	15,372	14,126	1,16,782	309	1,46,589	...	24,664	1,71,768	92,268	..	2,88,700	2,67,894	...	...	7,03,183
1858-59 ...	...	19,984	15,125	1,23,563	15	1,58,687	...	25,979	2,80,892	1,48,693	647	4,56,211	2,56,663	...	...	8,71,561
1859-60 ...	2,500	17,838	13,422	42,129	100	75,989	...	9,821	2,42,934	1,94,613	411	4,47,779	2,58,992	...	...	7,82,760
1860-61 ...	1,075	37,013	20,138	34,925	44,381	1,37,532	...	7,038	1,61,391	1,63,376	1,800	3,33,605	1,81,873	...	...	6,53,010
1861-62 ...	149	46,894	64,958	1,66,815	90,295	3,69,111	100	8,845	1,78,460	2,16,387	8,735	4,12,527	1,98,311	...	...	9,79,949
1862-63 ...	...	1,38,390	64,943	2,93,048	48,022	5,44,403	1,132	9,377	1,96,477	2,45,750	495	4,53,231	2,49,679	...	...	12,47,313
1863-64 ...	20,025	1,84,692	70,257	2,90,542	11,624	5,77,140	710	6,648	1,17,277	2,32,934	81	3,57,750	2,42,511	...	...	11,77,401
1864-65 ...	38,745	2,08,148	42,158	3,40,336	30,297	6,59,684	80	17,701	1,05,916	2,66,019	63	3,89,779	2,80,337	31,126	1,049	13,61,975
1865-66 ...	54,800	2,65,125	76,989	4,48,870	45,450	8,91,234	174	20,239	1,70,362	2,75,957	6,026	4,72,758	3,31,924	50,428	6,780	17,53,124
1866-67 ...	3,541	3,05,001	58,594	3,94,504	39,336	8,00,976	643	24,812	2,29,842	3,06,593	21,015	5,82,905	3,24,154	39,637	...	17,47,672
1867-68 ...	36	1,79,913	88,752	3,09,792	75,434	6,53,927	65	11,303	1,77,399	3,28,161	5,877	5,22,805	3,53,766	40,829	...	15,71,327
1868-69 ...	...	1,96,601	1,09,431	2,78,909	51,830	6,36,771	...	9,892	1,63,216	3,16,467	1,956	4,91,531	3,75,131	30,660	5,170	15,39,263
1869-70 ...	...	1,76,301	80,749	3,21,409	35,178	6,13,637	910	10,407	2,19,047	3,53,196	3,526	5,87,086	4,57,073	77,878	1,783	17,37,457
Total ...	1,20,871	18,79,162	7,30,675	33,59,512	4,72,897	65,63,117	3,814	2,16,847	26,31,930	32,62,806	50,632	61,66,429	40,25,026	2,70,558	14,782	1,70,39,912
Average ...	16,108 7/8	1,34,225 6/7	52,191 1/14	2,39,965	33,778 5/14	4,68,794 1/14	476 3/4	15,489 1/14	1,87,995	2,33,086 1/7	4,219 1/3	4,40,459 3/14	28,77,501 5/7	45,093	3,695 1/2	12,17,136 4/7

Rs. 59,085 is included on account of Telegraph.

Statement showing Expenditure from the year 1870-71 *under "Agricultural."*

Years.	Agricultural.											Establishment.	Tools and Plant.	Profit and Loss.	Total Outlay.
	Original Works.					Repairs.									
	Imperial.	Contribution.		District Fund.	Total.	Imperial.	Contribution.		District Fund.	Irrigation Cess.	Total.				
		Money.	Labor.				Money.	Labor.							
1870—71 ...	1,21,327	...	...	...	1,21,327	1,91,550	...	...	...	...	1,91,550	...	...	...	3,12,877
1871—72 ...	1,27,179	...	...	...	1,27,179	1,85,354	15,147	...	...	...	2,00,501	...	...	...	3,27,680
1872—73 ...	1,36,612	...	...	...	1,36,612	1,65,749	17,363	...	...	...	1,83,112	2,15,474	10,303	...	5,45,501
1873—74 ...	1,77,456	...	...	...	1,77,456	1,59,584	20,053	14,100	7,315	...	2,01,052	2,23,190	18,575	45	6,20,318
1874—75 ...	2,85,301	22,894	...	...	3,08,195	1,23,978	14,223	21,190	2,961	...	1,62,352	2,28,125	4,695	738	7,04,105
1875—76 ...	3,41,062	49,718	5,219	1,587	3,97,586	1,37,815	13,633	10,621	662	6,637	1,69,368	2,71,716	13,898	342	8,52,910
1876—77 ...	4,57,495	52,680	2,373	1,857	5,14,405	1,73,069	11,508	7,689	2,569	2,992	1,96,772	3,09,443	29,024	100	10,50,599

Note No. 4.

The duties of the Mysore D. P. W. when originally formed in 1856, as connected with Tank and Channel Repairs.

1. The first communication on the subject is the despatch of the Honorable Court of Directors, No. 43 of 5th July 1854, in which they gladly seize the opportunity afforded by the state of the cash balances, to authorize the immediate adoption of more effectual means for the execution of works of public improvement; adding "It is scarcely necessary to observe, that the object we have in view is not the repair and maintenance of existing works, but that opportunity should be taken of executing such works of unusual magnitude and importance in any locality, as may appear, calculated after mature consideration, to promote in the largest degree the development of the resources of the country." This despatch was circulated to the Revenue Superintendents of Divisions by Sir Mark Cubbon.

Letter from Government of India, No. 1669 of 14th April 1856.

2. The Superintendent of Bangalore did not consider that there were any works required in his Division of the magnitude signified, and merely suggested the construction of two roads under the "exclusive attention of European Officers." "The ordinary tank repairs which are being executed annually," he considered "are as much as can be performed by the Vaddars (tank diggers) at present settled in the country."

Captain Hains' No. 291 of 30th December 1854.

3. Similarly the Superintendent of Nagar thought that the greatest improvement which could be effected by Government would be "the opening up of good roads and the bridging of otherwise dangerous streams." In the Malnad no artificial means of irrigation were required, and in the open Taluks there was more wet land than there were people to cultivate. Though observing that it had been the custom of his Division "to give over most of the tank repairs and works of irrigation to the Amildars to perform, who, already overpowered with their duties, "have entrusted them to the Shekdars, who in turn hand them over to the Patels, "the work being thus improperly performed and great loss incurred," he does not appear to have looked for a remedy of these evils through the agency of the proposed Department.

Captain Porter's No. 294 of the 29th November 1854.

4. The Superintendent of Chitaldroog urged not only the construction of the Marikanave reservoir as coming directly within the scope of the Despatch, but pressed on attention in the strongest terms the claims of the tanks, observing "It "is not too much to say that twenty lakhs of rupees will yet have to be expended in "work of improvement and restoration alone," adding, "It being impossible to keep up the incitement by which he had hitherto provided supervision for the works of his Division, a very large increase of establishment will be absolutely necessary even for the very purposes of economy, so large an increase in fact as to form an entirely organized Department under the Superintendent of the Division, and a duly qualified Assistant."

Captain Dobbs' No. 85 of the 15th March 1855.

5. Lastly the Superintendent of Maramat, as the Chief Engineer was then designated, offered his opinion, that with reference to the projects on the "vast and comprehensive scale" contemplated by the despatch, Rs. 38,00,000 might with advantage be laid out on large new irrigation works, Rs. 6,36,000 on new roads and bridges, and that ten lakhs should be devoted to the repairs and restoration of tanks, and two lakhs to the Ashtagram river channels. The tanks had many of them "arrived at a stage when very extensive improvements have become necessary "* * * and they will continue to decline in capacity on their present "plan unless some extraordinary efforts are made to meet the changes of years."

Lieut-Colonel Green No. 10 of the 16th January 1855.

6. Sir Mark Cubbon on submitting the above correspondence with his own views to the Government of India, practically confined himself, with an exception in favor of the Marikanave reservoir, to suggestions for the formation of an efficient Road Department. Some 1,728 miles of unmetalled roads had been constructed in the Province, and not being at the time prepared as he observes "to advocate the

Letter No. 14 of 2nd March 1855.

construction of any new lines," his object in addressing Government was "simply to "obtain its sanction to an arrangement for keeping in a perfect state of efficiency "what has already after a certain sort been completed." It had "become absolute-"ly necessary both for the exigencies of trade and the comfort of travellers that the "principal lines should be thoroughly metalled and maintained in a state of perfect "repair; but even to attempt this will involve an amount of personal inspection and "wearisome correspondence to which the Civil Superintendents, overwhelmed as they "are with the revenue and judicial business of their Divisions, are altogether "unequal." The want of such an establishment "was daily and hourly brought to "his notice by the Superintendents of Divisions as well as by travellers, in a manner "which had forced upon him the conviction of the "utter break down of the attempt to maintain the "roads by native agency, without the minute and "necessary supervision of European Officers." "No works were required for pur-"poses of irrigation of the magnitude contemplated in the letter from the Honorable "Court of Directors," and again "great numbers of decayed tanks had been re-"stored since the assumption, and there were no doubt many more which could be "repaired with advantage, not however at once, but by degrees, as hands became "available to cultivate the additional wet lands, and markets were found for the "surplus produce; and until both were produced by a thoroughly improved system "of road communication" it seemed to Sir Mark "that any very greatly increased "expenditure on works of irrigation in a territory circumstanced like this, would be "attended with disappointment." As if to terminate any doubt as to Sir Mark's idea as regarded the functions of the new Department, he proposed that Colonel Green should be appointed under the designation "Superintendent of Roads in Mysore."

Letter No. 20 of 27th March 1855.

Letter No. 14 of 2nd March 1855.

7. In disposing of the matter, the Government of India rather lectured the great Commissioner on his heterodox views in deprecating the extension of wet cultivation, observing that "perfect security against* *this and all other imagi-"nable dangers consists in being careful to construct no tank or other irrigation work "for which you will not be fully remunerated by the payments of the cultivators," adding that "no doubt the careful attention of an intelligent Engineering Staff will "be the means of bringing forward many important projects for the general benefit "of the country."

Colonel Baker's letter No. 2698 of 28th November 1855.

8. By Notification No. 117 of 17th June 1856, in the *Calcutta Gazette*, the Mysore Public Works Department was constructed with the following strength:—

Direction, 2	1 Chief Engineer, 2nd Class. 1 Assistant Chief Engineer.
Executive Officers, 9	1 Executive Engineer, 2nd Class. 1 Do 3rd „ 3 Do 4th „ 4 Probationary Assistant Engineers.
Upper Subordinates, 11	1 Supervisor. 1 Assistant do 2 Overseers. 7 Assistant do
Lower Subordinates, 19	1 Sub-Overseer, 1st Class. 3 Do 2nd „ 12 Do 3rd „ 3 Sub-Surveyors.

This was doubtless a very great increase on the Engineering Staff which up to that time had existed in Mysore, *viz*:—

Direction, 1	1 Maramat Superintendent.
Upper Subordinates, 6	2 Surveyors. 4 Assistant do
Lower Subordinates, 17	5 Sub-Assistant Surveyors. 12 Apprentices. 7 Mestris.

Notwithstanding this great accession of strength, I think it will be clear from a perusal of the foregoing, that not one of the several authorities had fairly considered the specific work to be performed by the new Department, and particularly as regards its position and duties in reference to what is now universally admitted to be

the most important matter connected with the welfare of the Province, *viz.*, the restoration and maintenance of those 26,000 irrigating tanks now yielding revenue.

9. Captain Dobbs and Lieutenant-Colonel Green had each (and especially the former) a distinct idea of the magnitude and importance of these tank repairs; but even as regards these Officers there appears to have been no clear conception how this great work was to be systematically entered upon by the new Department. What was hazy in its magnitude to the best informed of those on the spot, was necessarily a "*terra incognita*" to all at a distance, and consequently it is a matter of no surprise that at the outset the Department commenced its existence, like other newly born creatures, without seeing its way very clearly.

Major Puckle's Memo of the 8th April 1868.

10. One of the first Officers who joined the new Department in relating his experience of this time observes, "From 1856 to 1861 "regarding which I speak with confidence, almost all "irrigation repairs, and certainly all ordinary civil build-"ings expenditure in this Division (Bangalore) were carried out as before in reality, "though nominally by the new Department; and I have myself placed the Range "Mestri under the direct authority and control of an Amildar, feeling convinced "that in no other way could direct responsibility and close supervision be ensured."

11. Major Johnson, Superintending Engineer for Irrigation, informs me that when first appointed to the Department in December 1855, he merely considered himself as Assistant to the Superintendent of Ashtagram, but by subsequent orders he was made independent of that Officer.

12. The roads were completely handed over; not so the tanks or channels, which were left in charge of the Revenue Department. Subsequently the Taluk Mestris and Mutsaddis, though still paid in the Revenue Department, were placed under the Executive Engineer's orders, and estimates were prepared and work executed through their agency. Still neither were the tanks nor channels made over to the Department Public Works, and Executive Officers merely carried out such repairs, &c., as their own inspections or those of the Revenue Officers showed to be necessary.

13. Some three years after the formation of the Department, the Superintendent of Ashtagram placed the Channel Establishment under Major Johnson's orders to see if he could make anything of them. Their pay was then merely nominal, a few annas a month for each individual, the rest being made up of what they could get out of the raiyats in the shape of Mirasi. Under such circumstances the men were the servants of the raiyats rather than of the Government, and no good could be got out of them.

14. The Kerebandis, Nirgantis and other tank servants are still and always have been under the Revenue authorities; and the orders regarding maintenance of tanks have always been issued to the heads of villages who are supposed to be responsible

15. Not only were no orders issued by the Government of India at the first formation of the Department which could be construed into an intimation that the charge of tank repairs had been removed from the Revenue Officers, but the Department Public Works Code does not once specifically make mention of such works.

16. The Code orders on the subject of repairs of works generally, if indeed followed out, would imply that all such would devolve on the Department, even the most petty; but I think it is perfectly clear that the tank system of Southern India formed no portion of the Code scheme; thus in fact wholly omitting what is now acknowledged to form the most important duty devolving on the Department Public Works in this Province.

Colonel Dobbs' No. 3803—106 of the 22nd February 1867.

17. It has been stated by the oldest Revenue Officer connected with the administration just before saying good-bye to the Province, that the "Department Public Works had been "on its trial for nearly eleven years, and as respected "tanks had entirely failed to fulfil the expectations which the originators of the sys-"tem entertained of its success," there can be no question as to the sincerity with which this statement was put forward, the more so as this very Officer had himself, as Superintendent of Chitaldroog, taken the most active and intelligent interest in the tank repairs of his Division; but I think a careful study of all the correspondence which I have quoted from, will show that the opinion, however sincere, was an entirely mistaken one.

18. The Court of Directors had in view the execution of works of public improvement on a vast and comprehensive scale, and appear to have been under the impression that repairs of all kinds (necessarily including tanks) were minor matters and sufficiently provided for by the then existing arrangements.

19. The Commissioner of Mysore only thought of perfecting the unmetalled roads which had been constructed, and deprecated any special arrangements for increasing the area of wet cultivation, thereby inferentially ignoring the claims of the Mysore tank system coming directly within the category of duties to be assigned to the new Department. Again the Government of India, though no doubt aiming at a general improvement of all irrigation works, had not the requisite information before them to allow of the question of tank repairs being considered in its true bearings; and consequently in the actual constitution of the Department, no specific arrangements of any kind were made directly bearing upon the point. As a fact, the tanks and channels were not made over to the Department, and it was only by a species of lapse, and chiefly owing as I imagine to the introduction of the budget system by which all charges for works (and incidentally tank repairs) were included in the yearly grant to the Department Public Works, that individual works came to be dealt with by the Departmental Officers. It was only in 1863, that the demands as regarded tank repairs became so pressing as to call for a special consideration of the whole subject, and certain specific arrangements by which a rough distribution was effected between works of this nature as falling under the care respectively of Revenue and Public Works Officers. This change will be the subject of a separate Note.

R. H. S.

Note No. 5.

Changes effected in 1863, with reference to Tank Repairs.

1. It would be useless to trace all the steps which led to a thorough reconsideration of the subject of tank repairs; suffice it to say that a great deal of correspondence had taken place between all the local authorities concerned, and various proposals on the subject of re-organized establishment were submitted to the Government of India, who (in Colonel Strachey's letter No. 4991 of the 18th December 1862) ruled, that it was desirable "to transfer as much as possible the care of these minor works (tank repairs) to the Revenue Department."

2. Deputy Superintendents were to have original powers of sanction up to Rs. 200 on each work, and Superintendents up to Rs. 500. The agency of the Revenue Officers was not to stop there however. The Commissioner was informed that it entirely rested with him to determine whether work up to his own limit of sanction (Rs. 10,000 on a single undertaking) should be carried out by the Department Public Works or by the Revenue Officers, the only restriction in the latter case being that the work should be reported on by the Chief Engineer in the first instance. It was in fact expressly intimated, para 12, that the expenditure thus incurred by the Revenue Officers though provided for in the budget was to be "without any supervision by the Public Works Department."

N. B.—There is a slight clerical error in the letter as regards this portion but it is of no significance.

Pursuant on this decision, a Committee constituted as per margin assembled at Bangalore and presented its report on the 31st March 1863. This report which was afterwards confirmed by the Government of India consisted of (1) a full statement of objects and reasons; (2) a set of rules for guidance of Civil Officers; (3) forms of account for guidance of Civil Officers; and the whole was followed up by Notes drawn up (by Lieut.-Col. Carpendale, R. E., Officiating Chief Engineer) for the guidance of Amildars in the execution of agricultural repairs.

Lieut.-Col. R. S. Dobbs, President, Superintendent, Nundydroog Division.
Major R. H. Sankey, R. E., Assistant Chief Engineer.
Major J. Puckle, Deputy Superintendent, Tumkur District.
} Members.

3. All these documents were printed in both English and Kanarese, for the information of all who might in any way be connected with the new scheme.

4. No pains were spared to convey the fullest instructions upon the important subject of the change in execution of tank repairs then inaugurated. Forms of contract bonds, reports, specifications, estimates, &c., were also furnished for the

guidance of Revenue Officers; and I think a perusal of the documents themselves will clearly prove the hearty desire which then existed to settle once for all this vexed question; and rather to err on the side of laxity of control, than in any way to hamper the perfectly free action of all Revenue Officers in regard to undertaking tank repairs on their own motion and through their own agency exclusively.

5. To begin with, the Chief Engineer reserved not a single farthing of the Public Works grant for his own sanctions, the whole 1½ lakhs being distributed thus—

Commissioner	...	..	...	... 75,000
Superintendent and Deputy Superintendent,			Nundydroog Division	... 25,000
Do	do		Ashtagram Division	... 35,000
Do	do		Nagar Division	... 15,000
			Total	... 1,50,000

6. Each Superintendent of a Division could sanction any individual repair work up to Rs. 500, each Deputy to Rs. 200; while the Commissioner held in reserve the large amount shown above, with powers, if he so desired, to give out all for execution to Revenue Officers only first calling for the Chief Engineer's report on works over Rs. 500. Each Deputy Superintendent was given an establishment of—

1 Surveyor and Estimator	at Rs.	70
4 Mestris	,,	25
4 Mutsaddis	,,	15
1 English and Kanarese Clerk	,,	50

half of which was to be debited to local funds. The cost of the whole establishment thus created amounted to Rs. 32,165 per annum.

7. One of the fundamental rules was, that no expenditure was to be incurred on any work otherwise than on estimate sanctioned by proper authority. What real check this afforded I will advert to presently; meanwhile it will suffice to say that all the Chief Engineer saw or required was a notification of sanction by the proper sanctioning authority, it being essential that the appropriations against budget grant should not be exceeded. These notifications gave the so called abstract of the estimate to show that the fundamental rule had been attended to, but in the absence of any details of course there could be no examination of check. In so many words the Revenue Officers framed for themselves estimates for all tank repair works throughout the Province, individually under Rs. 500, merely notifying the amount of sanction to the Chief Engineer. Nothing in fact could exceed the freedom accorded.

8. Before proceeding to show the results of this important change of policy, I have to mention one or two circumstances incidentally connected therewith. The Accountant General, Department Public Works, Colonel Chesney, on visiting Bangalore in January 1867, brought to the notice of the Government of India in his Inspection Report that, owing to the system above described, "the greater part of the repairs" estimates in Mysore (he should have said all the irrigation repair estimates) are passed by the Commissioner, but the recognized authority for this purpose is the Chief Engineer," and in passing orders on this (Secretary to Government of India, Department, Public Works, No. 67 A of 21st January 1867) the Governor General directed that in future " the estimates for repairs should be passed by the Chief Engineer instead of by the Commissioner, as is now done."

9. It will thus be observed that for four years nearly, the Commissioner had the whole agricultural repairs at his own disposal, but that after that time a change was effected by order of the Government of India, which by throwing practically the responsibility for all repairs on the Chief Engineer, introduced a very anomalous state of matters, as no other point did the order referred to interfere with the rules before quoted of 1863.

10. Before considering how this affected the relations between the Department, Public Works, and the Revenue Officers, I may observe that precisely as the latter had been assigned an almost entirely independent position with reference to the tanks in 1863, a change was made in the following year with reference to the management of the great irrigation channels under the Cauvery, Hemavati, Lakshmanatirtha and Shimsha rivers, which was, if anything, more radical. A Conservancy Establishment was formed for these works in 1864, and placed under the

Revenue Officers. No initiatory power of inspection lay with the Department, Public Works, by the rules framed, and as a fact, down to the formation of the new Irrigation Department in 1870, no Public Works Officer was called in by the Revenue Officer to inspect the works. The repair estimates were submitted for the examination of the Chief Engineer, but being unaccompanied by plans, sections or such other information as would permit of professional check, the whole proceeding was little more than a formality. Figures were given and the arithmetic corrected, but this was all.

11. After the new position assigned to the Chief Engineer by the order of 1867, it was natural that discussion should arise, as being made responsible before Government for all repair estimates, he was by rules of 1863 practically deprived of the power of criticism over at least all works under Rs. 500.

12. In 1868, as is well known, the Chief Engineer was by order of Government constituted Secretary, and shortly after in 1869 the new Irrigation Department was formed under Major Johnson, but to this day the anomaly above adverted to still exists. The Superintending Engineer for Irrigation, I believe, took on himself to some extent to call for information and criticise the estimates for works sanctioned by the Revenue Officers under Rs. 500 each, but the power to do so was withdrawn on reference ; and he now confines himself to such examination of authorities, &c., and general financial check as may be essential.

13. The foregoing brief account of the phases of this important question would be incomplete without reference to actual figures. I have therefore had the accompanying statement D compiled in the Controller's Office. It shows in the left set columns, all the irrigation works executed by the Revenue Officers since 1865-66, (the previous year's accounts do not admit of this analysis) and in the right set, those by the Department Public Works Officers.

14. From this it would appear that of the average number of works carried out yearly by the Revenue Officers, 682, no less than 571 were repairs falling within their own competence to sanction. Down to 1868-69, only notifications of sanctions reached the Chief Engineer, who saw that proper appropriations were made,—but no detailed estimates being submitted practically, no check was or could be exercised. After that the Superintending Engineer for Irrigation did exercise to some extent a criticism on these minor repair estimates, but within the last few months this has ceased.

15. I think that the first inference from the figured statement will therefore be, that all repairs of tanks under Rs. 500 each have, with the very slight exception mentioned, been now for nearly eight years entirely in the hands of the Revenue Officers, without any, even slightest, check by this Department.

16. It is difficult to draw such absolute conclusions from the columns showing the lapses that have occurred as would be desirable, as those shown are only lapses on specific assignment for each individual work and take no note (1) of the general lapse on original assignment of funds for the year nor (2) of the resignations of assignment, which are often made suddenly just before the close of the year. However, I think we may conclude that the results generally show that the Revenue Officers have not made as good use of the funds placed at their disposal as the Public Works Officers on precisely the class of work in which it was taken for granted the latter must fail. The lapses on Public Works Department works have in fact been little more than half those on Revenue works ; and when it is recollected the rules of 1863 were introduced on the ground that the latter could, from their general position, influence in the country, and establishments at disposal carry out all the class of work so much more easily than the Department Public Works Officers, the principle itself seems open to question.

17. I have had other statements made out showing the time taken to execute individual irrigation repair works under both Departments, and the result is the same. The Officers of this Department have certainly executed the works with greater expedition. It is unnecessary for me however to burden this Note with more figured statements.

26. Only one more point calls for notice ; during the past year the lapses have been inconsiderable in both Departments. This is no doubt due mainly to the action of the Superintendent of Irrigation, impressing upon all the necessity of resigning funds they cannot utilize. It may also indicate greater speed in execution of work; but I am not quite sure whether this inference can be so safely drawn.

Abstract of Agricultural Repairs executed by Revenue and Public Works Officers between 1865-66 *and* 1869-70.

Years.	Dealt with by Revenue Officers.						Dealt with by Executive Engineers.			
	Number of works under Rs. 500.	Number of works above Rs. 500.	Total.	Total of Appropriations.	Actual Outlay.	Percentage of lapse on Appropriations.	Number of works.	Total of Appropriations.	Total Outlay.	Percentage of lapse on Appropriations.
				Rs.	Rs.			Rs.	Rs.	
1865—66 ...	536	78	614	1,44,802	1,15,634	20·1	38	57,890	54,725	5·4
1866—67 ...	649	140	789	2,53,290	1,72,191	32·1	53	73,096	57,651	21·1
1867—68 ...	571	124	695	1,36,855	1,27,147	31·9	45	62,140	51,367	17·3
1868—69 ...	591	107	701	1,76,268	1,25,866	28·5	45	42,521	37,350	12·1
1869—70 ...	505	106	611	1,78,634	1,66,032	7·0	52	64,323	58,842	8·5
Totals ...	2,855	555	3,410	9,39,849	7,06,870	119·6	233	2,99,970	2,59,935	64·4
Averages per Annum ...	571	111	682	1,87,970	1,41,374	24·0	47	59,994	51,987	13·0

R. H. S.

Tank Maintenance and Conservancy Scheme.

1. In para 4 of Secretary of State's letter No. 77, dated 30th September 1870, it is stated the Irrigation Committee recommended that the above scheme should be carried out by the agency of Revenue Officers. It will, however, be observed in para 10 of its Resolutions, the Committee reserved certain series entirely to the Public Works Department, and in its para 23, all works exceeding Rs. 5,000, see also para 65, in which it was stated that the circumstances of each series should be separately considered, and whether it was to be placed under the Revenue or Public Works Department Officers, decided on the merits of each particular case. In point of fact, although rules were drawn up for the manner in which these tank repairs were to be carried out by Revenue Officers, the great object of the Committee was to decide on the system of maintenance to be adopted. It was felt that, however much money and labor might be expended in putting these works into thorough repair, little permanent good would be effected unless provision was made for preventing their relapsing again into their former condition. The system recommended of making the raiyats maintain these works themselves, is reputed to be an old one, before proposed but never sanctioned. It has now received the approval of the Government of India and of the Secretary of State, and all that now remains (so far as this important point is concerned) is to draw up a scheme for working it effectually.

2. At the time the Committee sat, moreover, there appeared to be little probability of the Public Works Department being put on such a footing as to allow of its undertaking any great part of the work: the feasibility of doing this has since been indicated; and as much experience has since been gained regarding the tank system, and the best method of dealing with it, I have considered it desirable to submit for approval the result of this experience in the following proposals which I am inclined to think will meet with the support, both of the Revenue and Public Works Officers in the Province.

3. To allow of the proposals being understood, it will be as well to explain concisely the tank system in Mysore. These tanks are not, as a rule, single reservoirs, but are situated one below the other in chains, the upper tanks surplusing into those immediately below them. The surplus channels of these chains con-

verging and falling into each other form drainage lines across which other reservoirs have been constructed. A tank series therefore consists of a number of such chains, the drainage of which is ultimately caught by some tank, which surpluses into some river, and has no tank below it catching its surplus. This is called the terminal tank of the series, and being as a rule of considerable size and importance, the series is generally named after it. A sketch plan of a series is appended for reference. A series may be composed of from two to two hundred tanks or even more, and may cover an area of from two or three to hundreds of square miles. The Sulikere lake catches the drainage of 250 square miles, and the proposed Marikanave the drainage of 2,100 square miles. The uppermost tanks of each series are as a rule very small and unimportant, having little or no cultivation below them, yielding little or no revenue, and being only useful as silt traps and for watering cattle, &c. Below these again come what may be called village tanks, on which the villages depend for their supply of water and which have all more or less cultivation below them. The bulk of each series is made up of the above two classes of tanks, the revenue of the latter seldom exceeding Rs. 500. In addition to these, there will be generally in each series one or more important tanks yielding a revenue of from Rs. 1,000 to 5,000, or even more. It will be understood that the failure of any tank above another that was at the same time surplusing would probably breach the lower tank. The united waters of the two breached tanks would be suddenly discharged into the next below, and carry away the bound of that also, and so would they go on breaching, one after the other all down the chain. This is what occurs year after year, causing most disastrous loss, both to the raiyats and the State.

4. Neither money nor establishment has hither to been sufficient to allow of this evil being treated in a systematic manner. The works for repair and improvement have hitherto been selected somewhat arbitrarily, with reference more to their individual importance and urgency than to the general system of which they form part. The tanks low down the chains being the largest and yielding most revenue, have generally received the greatest share of attention, the uppermost being left to take care of themselves. The consequence is that work done one year is frequently carried away during the next.

5. There are many other reasons why these works require to be taken up in a systematic manner. It is not at all an uncommon thing for the water-spread of a tank to be four or five times as great as the area it irrigates, and the land thus flooded and useless being in the lowest part of the valleys is, as a rule, the richest and most fertile. By improving an upper tank it is often possible to do away altogether with that below, and to irrigate from the upper tank not only all the land previously irrigated, but the bed of the abandoned tank besides, with the additional advantage of having one tank to maintain, instead of two. These works moreover have been constructed merely by rule of thumb ; and by alteration of sluices, sluice channels, and other contrivances, it is often possible to make a tank command more land than it now does at a very slight expense. In carrying out any scheme for putting these works on a proper footing, it would be ridiculous to neglect such considerations as these, and the best thing to be done can only be ascertained by a thorough investigation of each case and the collection of all the data affecting it. Each series of tanks must form one project, be treated as one, accurately surveyed and plotted, a carefully considered scheme drawn up and approved, the work carried out under competent supervision ; after which the tanks comprising it may be handed over for up-keep to the raiyats themselves under stringent regulations, and cause little further trouble. The above is, I believe, the only way in which these works can be dealt with in a satisfactory manner, and this duty cannot be performed by Revenue Officers. If a professional establishment under their orders is to be given to assist them, it would be better to place it under the Public Works Department which would be able to criticize such schemes as might be submitted, which the Revenue Officers certainly have not the knowledge to enable them to do.

6. My propositions therefore are that the preparation of the projects for bringing these works up to standard should devolve on the only Department capable of doing it properly, namely the Public Works Department ; that that Department be re-distributed as proposed below to enable it to undertake the work, and in carrying it out, that the cordial co-operation and assistance of the Revenue Officers be not only invited but freely given.

7. In drawing up detailed proposals for putting in hand the above scheme, two considerations are of paramount importance—1stly, the amount of work to be

done and its probable cost ; 2ndly, the means that are likely to be placed at our disposal for carrying it out.

8. As regards the work to be done, Appendix B gives an abstract of the total number of tanks in the several Districts of Mysore according to the latest returns, classified according to the revenue they yield. It will be seen that there are 36,266 tanks, of which 9,865, are out of repair, or yield no revenue. The balance of 26,401 tanks yield a revenue of 30½ lakhs, an average of Rs. 82 per tank. Of these about 20,000 yield below Rs. 100 per tank, and of these again 15,000 yield below Rs. 50 per tank. For reasons below stated, I deduct from the above list the tanks in the Shimoga and Kadur Districts, which will leave 19,223 tanks to deal with, yielding a revenue of Rs. 18,93,243. It is impossible with the data at our disposal to make anything better than a rough guess of what it will cost to bring these tanks up to standard ; but after much consideration, I have assumed it will require two and half years' revenue on an average to repair each of them. This average will probably be exceeded on the smaller tanks as well as on those to be restored, butwill be over the mark on the larger ones. This gives us upwards of 47 lakhs of rupees, say 48 lakhs as the cost of the work to be done. It will be seen below that it is proposed to form six District establishments. Dividing the work equally amongst them and assuming it to be completed in twelve years, there will be an average of 267 tanks to be undertaken in each District yearly at an average expenditure of Rs. 67,000. Detailed surveys and estimates will have to be prepared for each of these tanks, as well as general plans of each series, detailed information will have to be collected regarding each, projects drawn up for each series and carefully examined and approved. This work will be done by a survey establishment under the immediate supervision of an Assistant Engineer in each District, and the instructions of the Executive Engineers. A separate subordinate establishment will have the actual carrying out of the work, and the expenditure of the money. So much for the work to be done.

9. The proposed distribution of the establishment places at my disposal one Executive Engineer, two Assistant Engineers, twelve Upper and seventy -two Lower Subordinates, in addition to the Irrigation Establishment already sanctioned by the Government of India. The manner in which I propose that this establishment should be distributed will be found in Appendix A, the allowance for Lower Subordinates being expended on Surveyors. For the first year the whole establishment will be employed in preparing projects ; the year after, this duty will devolve solely on the Surveyors, and the Executive Branch will have the carrying out of the projects already approved. There will be thirty-four Surveyors to prepare the projects, which will give an average of forty seven tanks per man per annum. The actual work in each District have to be entrusted to three Upper Subordinates. It is difficult to say exactly what will the amount of this work will be, as I propose to hand over all works that can be possibly executed without constant professional supervision to the Revenue Officers for execution. The estimates having been carefully prepared will be handed over to them, and all they will have to do is to carry out the work in exact accordance therewith, subject of course to such supervision as may be requisite. As stated in my para 8, 20,000 out of 26,401 tanks yield a revenue below Rs. 100. I therefore assume that ¾ths of the tanks may be handed over to the Revenue Officers as above explained. This arrangement will leave an average of twenty three tanks for each Upper Subordinate to bring up to standard yearly, besides occasional inspection of works under Revenue Officers. The Assistant Engineers will have the general supervision of the whole works in the District, the inspection of the works in progress, the checking of the Surveyor's work, the drawing up and preparation of the projects and estimates. The Executive Engineer will inspect the works, be responsible for the general arrangements and progress, criticize and advise upon the projects, and prepare and submit the accounts. I very much fear that in cutting out this work, I have overtaxed the establishment ; all I can say is that we will do our best to carry out the programme and to improve upon it, if possible. After the scheme has been once fairly started, I shall be better able to report on the probable results. I have great hopes of being able to do at least as much as noted above, when the establishment has become accustomed to the work; but I am anxious not to cause disappointment by promising more than can be performed.

10. The cost of the above establishment with the requisite offices will not be less than fifty per cent of the proposed expenditure, even if the actual supervision of the labor is paid out of the rates in the estimates. This appears very high, but its must be remembered that it is not merely the repair of these multitudinous works

that it is proposed to carry out. When the scheme is worked out, Government will be in possession of accurate general plans of every tank series in the Province, plans and sections of every tank comprised therein, with full details and data regarding each of every sort and kind. Such information cannot possibly be got together without a large expenditure, and considering that the revenue now realized from these works is thirty and quarter lakhs yearly, that this will probably be much increased, that in addition to the actual revenue realized, the cultivation below these works affords a livelihood to a great portion of the laboring population and a handsome return to the land-holders, that a great proportion of the population are dependent on these works for a supply of water to themselves and cattle, and could not exist without them, I am certainly of opinion that this work must be done sooner or later, and that the money laid out thereon will be fully compensated by the results, not only as regards increased returns, but in saving expenditure in future. In considering this question, the great number and scattered nature of the works and the small sums required for expenditure on each must not be lost sight of. I have already shown in para 3 that however small some of these tanks may be, they cannot on that account be overlooked, as the breaching of one of them is often the last straw that breaks the camel's back, and carries away the whole chain below. They are moreover often exceedingly useful, both for watering cattle and in catching silt, and cannot as a rule be abandoned without causing much inconvenience and discontent.

11. I have been obliged to leave out of consideration altogether the Kadur and Shimoga Districts, as I am unable to provide for these without proposing an increase in the scale of establishment now sanctioned for the Province. It will be seen from Appendix B that these two Districts have more tanks than any others, and the revenue derived therefrom in the Shimoga District is greater than in any other; I regret that I am personally unacquainted with these Districts, but I believe the tanks are generally very small and that the high revenue derived therefrom is due to the *supari gardens for the growth of which the climate is peculiarly favorable. It is believed that the tanks in these Districts do not generally require the same amount of attention as those elsewhere; at any rate, without increasing establishment, we have no means of giving it, and they must therefore be left for the present in charge of the revenue officers as heretofore.

12. The remaining tanks in the Province, other than those that will be taken up by the Department, will also have to be looked after as at present by the Revenue Officers.

13. At present the usual annual allowance for repairs, agricultural, is Rs. 2,50,000; of this about 50,000 is required annually for the repairs to the river channels, and Rs. 1,00,000 will for some years be requisite for the repair of the tanks referred to in the preceding paragraph. An additional grant of Rs. 3,00,000 will have therefore to be made in order to allow of four lakhs being expended yearly as proposed. There is, however, little doubt that we shall not be able to work up to this allotment for the first year and until the establishment has got thoroughly accustomed to the work.

14. After the tanks are handed over to the riayats, a Conservancy Establishment will be necessary to inspect them constantly, and be answerable that they are not allowed to fall below the standard fixed for them; also to provide for repairs to masonry works, such as weirs and sluices, which it will not be advisable to entrust to the raiyats. An Inspector will probably be requisite in each District and a Mestri in each Taluk. It has not however been considered necessary to go further into this question until the general principle of the scheme has been approved.

15. It will be observed that in the scheme as above worked out, no provision has been made for sickness. The climate of Mysore is notoriously feverish, and the manner in which the officers and subordinates of the Department suffer from the constant exposure they have to undergo, is in some Districts such as occasionally almost to necessitate the stoppage of work. I have considered it as well to mention this.

W. R. JOHNSON, MAJOR,
Supdg. Engineer of Irrigation Works.

A.

Statement of proposed distribution of establishment, Irrigation Branch.

	Executive Engineer.	Assistant Engineer.	Upper Sub-ordinates.	Surveyors.	Remarks.
Cauvery.					
Channel ...	1	1	0	1	
Tank ...		1	3	5	
Hemavati.					
Channel ...	1	1	0	1	It is proposed to make over to me 72 Lower Subordinates including those already attached to the Irrigation Divisions, taking the average salaries of these at Rs. 50; I propose to employ instead 36 Surveyors at the same total cost.
Tank ...		1	3	5	
Hagri.					
Tumkur ..	1	1	3	6	
Chitaldroog ...		1	3	6	
Bangalore.					
Bangalore ...	1	1	3	6	
Kolar ...		1	3	6	
Total ...	4	8	18	36	

B.

Abstract of the Total Number of Tanks in the Several Districts of the Mysore Province.

Division.	District.	Total Number of Tanks.	Number of Tanks yielding no Revenue.	Number of Tanks yielding Revenue below Rs. 50.	Number of Tanks yielding Revenue between— Rs. 50 & 100.	Rs. 100 & 500.	Rs. 500 & 1,000.	Rs. 1,000 & 2,000.	Rs 2,000 & 3,000	Rs. 3,000 & 4,000.	Rs. 4,000 & 5,000.	Number of Tanks yielding Revenue more than Rs. 5,000.	Total amount of Revenue from Tanks in each District.	Remarks.
Ashta-Nundy-droog.	Bangalore ...	2,277	254	862	407	630	84	31	5	2	1	1	3,15,996	
	Kolar ...	5,282	1,427	2,028	783	886	108	33	7	7	1	2	4,66,869	
	Tumkur ...	2,081	1,096	285	175	359	94	39	20	6	3	4	3,43,767	
Gram.	Mysore ...	1,474	36	874	219	280	45	14	1	1	2	2	1,66,074	
	Hassan ...	6,324	566	3,903	910	847	68	21	7	2	...	...	3,95,863	
Nagar.	Shimoga ...	8,304	931	3,871	1,418	1,855	175	49	3	1	...	1	7,77,269	
	Kadur ...	8,738	4,452	2,910	640	635	55	34	7	...	1	4	3,54,529	
	Chitaldroog ...	1,785	1,103	268	93	226	53	29	7	3	...	3	2,04,674	
	Total...	36,265	9,865	15,001	4,645	5,718	682	250	57	22	8	17	30,25,041	

W. R. J.

From the Under-Secretary to the Chief Commissioner of Mysore, Irrigation Branch, to the Secretary to the Government of India, Public Works Department, No. 134—1610 *I, dated, Simla, the* 22*nd June* 1872.

SIR,

I have the honor, by order of the Chief Commissioner, to forward for the information of His Excellency the Governor-General in Council, the accompanying Memorandum drawn up by the Superintending Engineer of Irrigation, on the manner in which it is proposed to deal with the tank system in Mysore, as soon as the sanction of Government is received to the scheme proposed in this Office No. 671, dated 4th March 1871.

2. I am to forward also 35 spare copies of the Memorandum in accordance with orders contained in Government of India Circular No. 32 of the 3rd May 1872.

I have, &c.,
W. R. JOHNSON,
Under-Secretary to the Chief Commissioner.

MEMORANDUM ON THE TANK SYSTEM IN MYSORE, AND THE MANNER IN WHICH IT IS PROPOSED TO DEAL WITH THE SEVERAL SERIES OF WHICH IT IS MADE UP.

I. The tank system aims at storing up in reservoirs adjacent to the gathering grounds the portion of the rain-fall that may run off the ground, in order that it may be utilized for purposes of irrigation and water-supply, instead of swelling river floods, and running away uselessly to sea.

II. In Mysore, there are points on every main drainage, below which for economical and other reasons it is inexpedient to construct reservoirs, and it may even be said that with a few exceptions the limit to which the tank system may for the present be beneficially extended in Mysore has already been practically reached.

III. Owing, however, to the neglected and dilapidated condition in which the majority of these reservoirs had been allowed to fall, and the unsystematic manner in which their repair and restoration have been hitherto attempted, they are, although much improved of late years, still in a most unsatisfactory state, calculated to store only a portion of the rain-fall running off the ground, and being frequently carried away in whole chains by a little heavier rain-fall than ordinary. It is now proposed to remedy this—to bring gradually and systematically the whole of these works into as safe and efficient a state as they are capable of, and to ensure that they be henceforth maintained in that condition.

IV. The point on any main drainage below which it is inexpedient to construct a reservoir having been determined, and a tank being constructed, or already in existence at that point, minor drainage lines on which tanks are also constructed, will as a rule be found radiating therefrom in various directions, all of them, however, discharging their surplus ultimately into the main drainage line, and into the lowest tank thereon. This lowest tank it is proposed to call the "*Terminal Tank,*" which with the whole of the tanks above draining into it, will form one series to be named after it.

V. In this manner, it is proposed to divide the whole of the tanks in the Province into series, each of which will be a system complete in itself, any operations on the tanks in which will not affect in any way the tanks in any other series, nor will the tanks in that series be affected in any way by any operations carried on in any other series.

VI. Within each series, the upper tanks in adjacent valleys will also generally be independent of each other, though not of others below in the same series, and this will allow of each series being conveniently divided into several sub-series having terminal tanks of their own, which may occasionally be made into what may be called "Stop Tanks." This sub-division is to a certain ex-

tent necessary, as many of the series are made up of so large a number of tanks, that, without sub-dividing them, it would be difficult to deal with them without confusion. These sub-series are again divided into chains.

VII. A series of tanks on which to commence operations having been selected, the first thing to be done is to make a reconnaisance and sketch plan of the whole. This sketch plan should show every tank in the series whether in or out of order, the tanks it drains into, and that drain into it, its proper name and its number, according to the tank register. In a large series, it will take some time to make this reconnaisance and obtain this information, but no pains should be spared to get it accurately as it will probably save much after trouble. It will be found that there is much confusion regarding names and numbers and that much care is requisite. This work should as a rule be done by the Assistant Engineer himself, assisted perhaps by one of his smartest Surveyors, and the opportunity should be taken of selecting and noting on the sketch the most convenient natural features and situations for survey stations. This reconnaisance will give the Assistant Engineer a thorough acquaintance with the series he is about to take up, which it is absolutely necessary he should have. It should be commenced two or three months before the survey work on the series on which the Surveyors are already engaged is likely to be completed, so that their work may be cut out for them by the time they are ready to commence it.

VIII. As soon as the sketch plan is prepared or during its preparation, revenue details should be obtained and entered in a statement (Form No. I attached), the tanks being tabulated in regular order as laid down below. It is by no means an easy matter to obtain these revenue details correctly, and it will probably be requisite to request the Deputy Superintendents to lend some smart man from their office for a day or two to get them up. The great points to be attended to are, that the details given apply to the tank actually under consideration, and to that tank alone, and that they are complete. It frequently happens that this is not the case, owing to portions of the lands irrigated being in different villages or hoblis, or to the revenue realized being carried to credit of an anikat, or other subsidiary work below. All works dependent on the tank for their supply, should of course be considered as subsidiary to the tank project, and the revenue realized therefrom be included therein. As soon as the whole of the above information has been obtained and tabulated, and the sub-division into sub-series decided upon, the Assistant Engineer will be in a position to set his Surveyors to work.

IX. The information required from them is—1st, a plan of each sub-series on a scale of 4 inches to the mile, showing position of each tank therein, its catchment basin, water spread and land below, irrigated and irrigable; the course of its sluice and surplus channels, the natural features of the ground, &c., &c. From this plan, the areas of catchment basin and irrigable area will have to be computed. On the rough plan all the stations and survey lines should be shown; they may be omitted in the fair plan. It is difficult to lay down any precise rules as to the manner in which these surveys are to be carried out, or the amount of detail that is to be shown. The object is to obtain the information necessary with the least possible amount of work and cost, and a needless amount of accuracy is not required. The exact *modus operandi* must be left to the Assistant Engineer in charge. The more economically and rapidly the whole of the information absolutely necessary can be obtained, the more credit will be due to the Officer in charge; 2ndly, from the plans of the sub-series, a plan of the whole series will be put together on a scale of 2 inches to the mile;* 3rdly, a detailed plan will be required of each tank in the series on a scale of 4 chains to the inch. On this should be given plan, with longitudinal and cross sections of bund, contour of water spread at kodi level, with another contour run at the same time at a level of from 3 to 6 feet above, cross sections of the tank bed, not less than 3 for ordinary tanks (one close to the bund, another at the widest spread of the tank, and the third near the top, all parallel to each other) and as many as may be absolutely necessary for larger tanks. Cross sections of the bund, scale 20 feet to one inch. Masonry works, 10 feet to one inch. Details of ditto, 5 feet to one inch. These detailed tank plans are all to be drawn on paper of the same size ($27\frac{3}{4}'' \times 22\frac{1}{4}''$, single elephant) and to the same scales (with the exception

* This is not absolutely necessary and may be omitted if found too troublesome

of some of the largest tanks, in which it may be necessary to make some alterations), and to be as uniform as possible. A specimen plan is forwarded herewith for guidance.† They will on completion be put up in portfolios with the rest of the plans, statements, &c., connected with the series, with which they will form a complete record, containing all the information regarding the works that can be required.

X. All note books and rough plans must be carefully kept in the Executive Engineer's Office for future reference if necessary, and it can be hardly necessary to impress the necessity for the greatest care, in the selection, marking, and description of bench, and station marks. Further instructions regarding details, &c., will be found below.

XI. A sketch map is appended for the purpose of illustrating the order in which the tanks in each series are to be taken up; and it is requested that this order may be invariably followed. Standing on the bund of the terminal tank facing the water, a commencement is invariably to be made with the first tank to the right having no other tank draining into it, and no tank is to be considered so long as there is any tank above draining into it that has not already been disposed of. Chains will be supposed to end when their surplus reaches a tank, catching the surplus of any other tank not already considered. Each tank to be retained will be numbered in regular order(S. N. signifies Serial Number), and it will be seen by the sketch map that in this manner, by the time the terminal tank is reached, every tank in the whole series will necessarily have been disposed of. Sub-series will be made up of any convenient number of tanks unconnected with any other tanks in the series except those below their terminal tanks. A short study of the sketch plan will make the above perfectly plain and no further explanation appears necessary. The name of the tank when discovered should be written across the tank; the serial and the registered numbers below.

XII. The data regarding the tanks will be embodied in a statement (Form 2), which is sufficiently clear and requires no explanation.

XIII. The recommendations will be submitted in the form of a report which should accompany the plans and estimates.

XIV. The above papers, with the estimates for each tank, will be all that will be required with the project for any series of tanks, and will, in the opinion of the undersigned, provide all information and data in the most compact and concise, and at the same time in as complete a form as need be desired.

XV. The most important point to be considered in dealing with a tank series is the manner in which the water is to be stored. A variable quantity of rain falls each year in the catchment basin, and the proportion of this running off again varies considerably, according to the manner in which it falls, the lie of the land, and the nature of the surface, sub-soil, &c. Of the average rain-fall we can obtain an approximation sufficiently near from the registered readings of the gauges. Of the quantity running off we can at present only make a guess although when we have completed a few series, it is hoped that we shall be able to collect valuable data on this subject. For the purpose of starting with something, the undersigned has in the Bangalore District taken the average rain-fall at 36 inches, and the quantity running off ordinary soil at ¼th or 9″. This must of course be modified as may be necessary. The 1st principle that may be laid down is, that *if it will pay for storage, it is unadvisable that any water running off should be allowed to escape.* The total supply available for storage having been discovered, the manner in which it is to be divided amongst the various tanks in the series has then to be considered. To do this, it is first requisite to form a rough idea of the total irrigable area, and of the tanks (especially the large ones low down the series) that most require increase in capacity; this should be done while making the preliminary reconnaisance, and will be borne in mind in disposing of the tanks higher up the drainage. Commencing then with any tank at the top of one of the minor drainages, the points to note are:—

1. Quantity of water available.
2. Present storage capacity of the tank.
3. Irrigable area of the land below.
4. Its quality.
5. Population adjacent.
6. Ability and desire of raiyats to increase their wet cultivation.
7. Probable cost of improvements.
8. Probable return.
9. If water is more required, and if it will pay better to store it elsewhere.

† Under preparation.

In answering these questions, it must be recollected that we are not about to start a new tank system, but merely improve an old one. The present system has been in action for very many years, and the raiyats have acquired certain prescriptive rights to their tanks that must not be lightly interfered with, and in the opinion of the undersigned, this will fortunately be very seldom necessary. The staple cultivation of the Province is "Dry-crop," and although, if the soil and water-supply is good, and they have labor, cattle, and manure to spare, raiyats will generally take up wet cultivation in the immediate vicinity of their villages (and in the opinion of the undersigned should be made to pay for it whether they do or not), they will very seldom take up much at any distance therefrom. The village, however, would probably cease to exist and the dry cultivation be abandoned but for the tank. Although therefore a multiplicity of small tanks is opposed to all theory, as being more expensive to construct and to maintain, covering more valuable ground, wasting an enormous quantity of water by the greater area exposed to evaporation, and being more dangerous in excessive floods, yet it may reasonably be advanced that practically the present system is that best adapted to the present condition and wants of the Province and the people. Moreover, the greater and more general evaporation from the surfaces of all these small tanks during the dry weather, and the greater area of moistened soil, owing to infiltration therefrom, may be claimed as being most beneficial to the vegetation and climate of the Province, and may be considered to balance to a great extent the disadvantages above enumerated. Such being the case then, *no tank already in action should under any circumstances be abandoned, unless it can conclusively be proved that such a course is not only desirable but absolutely necessary.* The water running off should be stored as close as possible to its gathering ground, always provided there is a sufficiency of good land on which to utilize it, and a tolerable certainty of its storage in that position proving ultimately remunerative.

XVI. It will be observed that nothing has been said about water-supply for villagers, cattle, &c. The quantity required for this purpose is so infinitesimally small compared with that required for irrigation, and the idea of storing water solely for such a purpose in wide shallow tanks such as those under consideration (in which it is probable that loss by evaporation alone often exceeds by 100 times the quantity utilized) so eminently absurd, that it is unnecessary to take it into account. With the supply for their land that will now be given, the villagers will in most cases be very much better off than they ever were before, and if they will still persist in drinking the filthy sludge from a tank bed, a solution of all the impurities scoured from the neighbouring villages and the surface of the soil, rather than go to the expense of digging a few bowries below the tanks, they will still with economy have a better chance of saving sufficient to last them during the hot weather. There can however be no doubt that the influence of the Revenue Officers should be exerted to induce them to dig bowries into which water would filter from the tank, cleared at all events from many impurities, and in which, the water being removed from the action of the dry winds, the waste from evaporation would be smaller. In any case however in which a tank is necessary, the undersigned considers that the raiyats should be made to pay for a certain area of wet land, whether they cultivate it or not, as the water stored in the tank would yield a certain return probably if stored in tanks lower down the valley, which are otherwise deprived of a portion of their supply.

XVII. There are numbers of kattes too small to be dignified by the name of tanks, or to make it worthwhile to increase their capacity sufficiently to irrigate land, but nevertheless very useful, not only for watering cattle, but as silt-traps, catching and holding up a great deal that would otherwise come into more valuable tanks below. These should not be abandoned without proper consideration, but in future, none should be constructed, however small, without permission,* and all that are retained must be made perfectly safe.

XVIII. It may be as well to add a few remarks regarding "constructive details." Above tanks, there are often anikats, channels, catch-channels, silt-traps, and silt dams. In the tank itself, bund, weir and sluices to be considered. Below the tank surplus channels, sluice channels, anikats or dams, wuds, aqueducts, vudis and silt dams.

* Recent orders may somewhat modify this.

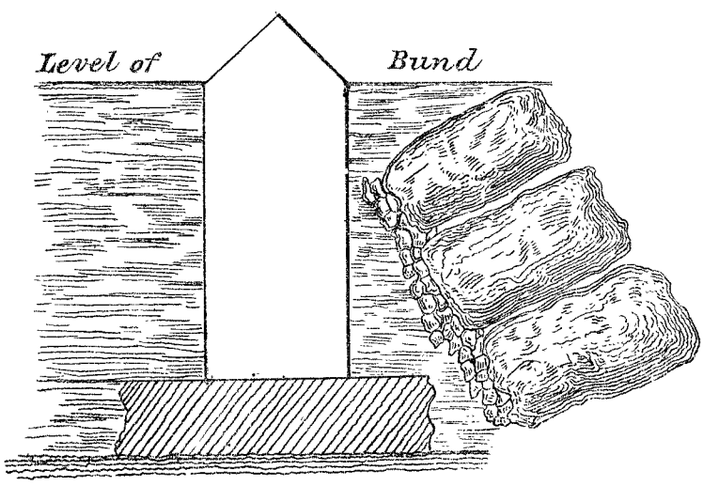
XX. *Anikats and Channels.*—As regards anikats and channels above a tank, there is not much to be said, as each project must be treated on its merits. As a rule, however, such channels should have plenty of fall, and be of considerable capacity, so as to take the greatest advantage of floods during the short time they last. There should also be the means of shutting off the flood at heads of channels, and precautions should be taken to ensure this being attended to in time of danger.

XXI. *Catch Channels.*—Catch channels are sometimes contoured to intercept drainage that would not otherwise fall into the tank. The area of catchment basin may in this manner be often doubled. The remains of these works may be seen in various parts of the Province, but most in a delapidated and abandoned condition. This is owing to their having been neglected. They necessarily catch all the silt washed off the upper lands, and unless this is regularly cleared out, they of course get choked, breached, and eventually obliterated. Wherever they exist, it should certainly form part of the raiyat's duty to keep them clear.

XXII. *Silt-traps and Dams.*—The greatest cause of the deterioration of tanks is silt, and this it is that is most difficult to overcome. To construct regular masonry silt dams is out of the question owing to the great length that is generally necessary. Earthen ones would answer well enough if kept constantly in repair, but this the raiyats will not do if built at the expense of Government. Much might be done by the raiyats in building these dams, and planting shrubs, aloes and coarse grass across the flats above a tank. Many years ago the undersigned recommended the enclosing and planting up of the land above tanks, between highest flood and ordinary water-level, and it is believed orders were issued on the subject, but nothing has, so far as he knows, yet been accomplished. The plantations that might be thus got up above some tanks would, if properly managed, be exceedingly valuable both for wood and forage. Silt-traps the undersigned explained above.

XXIII. *Bunds.*—The points to be considered regarding the bund, are height, width, slopes, and pitching. As regards height for small tanks, the undersignd considers that the weirs should, as a rule, be calculated for a 2 feet spill, and the bund be $4\frac{1}{4}$ feet above kodi level, and therefore $2\frac{1}{2}$ feet above H. W. L. With 3 to 1 front and 2 to 1 rear slopes, $4\frac{1}{2}$ feet, a even 3 feet top width for small tanks is sufficient. This must be increased for large tanks, especially when the bunds are used for paths or roads.

Slopes.—The generality of the old tanks in the District have front slopes of $1\frac{1}{2}$ to 1, 1 to 1, or even less. There are many examples of front slopes of 1 to 1, the stone pitching to which has been carefully built and has stood for years. In the majority of instances, however, this is not the case; and the pitching will be found bulged, and in a loose and dilapidated condition. Careful work is required to make pitching secure with so little slope, and high rates have to be paid. As a rule, in repair estimates sent in, the item for re-building the pitching is upwards of four times the cost of the earth work provided. The repair and re-construction of these stone facings is a constantly recurring expense and by far the most serious item in tank maintenance. They add nothing to the strength of the tank, merely protecting the bund from the wash and lap of the waves. Additional earth-work adds materially to the strength of a bund. In all cases therefore in which it can be carried out without incurring much additional expense, the undersigned considers flat slopes should be provided. These may be pitched with any stuff, however small, that may be procurable, or even turfed or planted with bull-rushes, coarse grasses, &c. Bunds should as a rule be highest over the deepest part of the tank, in order that in case of floods that cannot be withstood, the breaches may be forced to the shallower portions in which the soil will be generally harder and better able to withstand the scour. The height of the bund is to be in-



variably marked by bench stones as per margin, so that there may be no difficulty in detecting any neglect in maintenance.

XXIV. *Weirs.*—In many small upper tanks, the surplus is discharged through gaps at the ends of the bunds, which are not properly defined, or paved in any way. This suffices for many of these tanks, but a row or two of stones should be laid down for the sake of defining the weir and preventing its being tampered with. To calculate exactly what length a weir should be from area of catchment, storage above, &c., &c., &c., is a very difficult matter, and the safest plan appears to be to take the discharge of the drainage channels below bund, and regulate the length of weir from that. Much useful data might be obtained by carefully noting the waterway actually taken up by drainage of valleys in which no tanks are situated, such as those above roads. It is believed that the waterway provided and found sufficient is frequently less than that provided for tank weirs. If there are tanks in the valley, the discharge is held up thereby, and the data would not be so conclusive. It is a common plan to endeavour to save trouble and inquiry by making weirs larger than necessary. This plan if abused is however most objectionable. All tanks act as flood moderators. The length of weir of any tank should be regulated, by the time which some maximum rain-fall or discharge will take to fill the tank to its H. F. L., the weirs discharging the whole time. If the length of weir has been properly calculated, the rain-fall or discharge will have ceased by the time the H. F. L., is reached, and the quantity thus impounded in the tank above kodi level, will then gradually run off till the water drops again to kodi level. In this manner, rain-fall and discharges that would otherwise run off in 4 hours or 4 days, may, owing to the water impounded in the tank, take 8 hours or 8 days to run off, and thus tanks act as most efficient flood moderators. The larger the water spread of a tank, the better moderator it is, and the more completely it overcomes the danger of floods. If however the length of weir is increased without being raised, it must be evident that the discharge is likewise increased, and that the flood will be discharged in a shorter time. Although therefore the increase in length of weir may make that tank perfectly safe, it throws much extra duty on the weirs of the tanks below. This point has been particularly noted, as the practice is commonly followed to save a little trouble and investigation. One other point appears to require notice as regards weirs. The formula in ordinary use is intended for weirs with sheer overfall, but is often applied to weirs laid quite flat. This must evidently lead to erroneous results. Care should always be taken to ascertain that the draft *from* weirs is ample, and that the approach *to* weirs is also not contracted.

XXV. *Sluices.*—All that need be said here about sluices is that the greatest care should be taken in constructing them, none but the best materials and workmanship being used, and every precaution taken to see that they are properly founded, perfectly water-tight, and that the filling round them is thoroughly saturated and consolidated. Collars should be used to prevent any creep along the outside of the tunnel. The vents may be placed a little lower than the highest land they have to command, but a very little; they should never be below the bed of tank. Their cisterns should be brought in quite close to the slopes, or even placed in the slopes, so as to allow of the plug rods being easily reached, and prevent unnecessary length of tunnel. Sluices are generally placed between weirs. Much expense and trouble might frequently be saved by placing them outside weirs, thereby obviating the necessity of taking the sluice water over the waste-weir channels, bunding the latter off irrigated land, &c., &c.

XXVI. *Surplus Channels.*—No remarks appear necessary.

XXVII. *Sluice Channels.*—These must be kept in order by the raiyats themselves, and the distribution therefrom must be regulated by the Taluk authorities under some regulations that will apparently have to be drawn up for them. It may be noted that it does not follow that land close to a tank may be taken up, even although good. It is preferable that it should be first taken up, but land lower down may be more conveniently situated for the cultivators, whose representations in this matter are entitled to due consideration.

XXVIII. *Anikats, Dams and Wuds.*—For picking up tail water. Very useful and profitable contrivances when properly constructed, but should not be built for land that can be irrigated from sluice channels, as raiyats frequently desire.

XXIX. *Aqueducts.*—Are very troublesome works, and require very careful consideration. As a rule, it is best, if possible, to keep the channel within soil and throw the surface drainage over it.

Vudis.—Thrown up by the raiyats across low ground to irrigate high ground. Come under the class of works to be kept in order by the raiyats themselves.

XXX. *Stop Tanks.*—The Chief Engineer, Colonel Sankey, sometime ago suggested that, with the view of preventing as far as possible the disastrous effecs of unforeseen floods, certain tanks conveniently situated in each series should have their bunds so raised and strengthened, that they would be able to impound and discharge gradually a supply of water that would otherwise breach them and probably carry away the rest of the tanks below them. There can be no doubt of the benefit likely to be reaped by following this course. The principle involved is that explained in para 23. The capabilities of tanks as flood moderators is thereby increased. The tanks that should be selected for this purpose are those having (1) the greatest water spread, and (2) if procurable therewith, the shortest bunds, so as to entail least expenditure in raising. The weirs of these tanks must on no account be increased *in length*, beyond what would be ordinarily necessary, as by so doing the floods would be discharged more quickly and the great advantage of the "Stop Tank" be lost. As a rule, it is believed the terminal tanks of sub-series will be the most convenient to select for stop tanks.

By Order,
W. R. JOHNSON, MAJOR,
Under-Secy. to the Chief Commr. of Mysore,
Irrigation Branch.

BANGALORE,
16*th May* 1872.

Form I, Revenue Statement.

1	Number of Sub-Series	...
2	Do of Chain	No. 1
3	Serial Number of Tank	...
4	Registered Number of Tank	No. 336
5	Name of Tank	Kurubarahalli.
6	Tenure	Sarkar.
7	Registered Numbers of Terminal Tanks surplusing into	None.
8	Surpluses into	No. 19.

Revenue Details.

9	Area in acres of Kandayam land and Revenue realized	...	...
10	Do Batayi do do	19¾	108
11	Do Jodi do do	...	...
12	Do Kodagi do do	...	...
13	Do Inam do do	...	...
14	Do Private do do	..	...
15	Do dry cultivation and irrigable waste do	2	..
16	Do unirrigable waste do do	¼	...
17	Do total atchkat less unirrigable waste do	21¾	108
18	Do atchkat as per measurement do	...	...
19	Quality of the land	First Class.	
20	Population adjacent	Sufficient.	
21	Probability of extension of wet cultivation	Raiyats promise to irrigate as much as water will suffice for.	
22	Do of raiyats contributing in cash or labor	Will not contribute.	
23	Probable rate of assessment if tank is improved	Rupees 5 per acre	
24	Probable area that will be cultivated, Vaisakh	15 acres.	
25	Do do do Kartika	4¾ acres.	

FORM II. FIGURED STATEMENT.

HESSARGHATTA SERIES.

Description of Tank.

1 Number of Sub-Series	No. 4																	Stop tank.
2 Number of Chain	No. 1	2		3	4	5		6			7	8		9				
3 Serial Number of Tank	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4 Registered Number of Tank	336	79	338	69	71	62	97	81	77	7	98	100	86	136	83	84	19	
5 Name of Tank	Kurubar-halli.	Thogari-katte.	Mardehalli.	Tenkal.	Kernal.	Tubgere.	Tippenhalli.	Adonhalli.	Madehalli. Molamkere.	Palankere.	Tubsehalli.	Allasandra.	Auterhalli. Gundalkere.	Kumlur.	Kolur.	Mathagund-halli.	Talagavara Jamman-kere.	
6 Tenure...	Sarkar.	Sarkar.	Jodi.	Jodi.	Sarkar.	Kodigi.	Sarkar.	Sarkar.	Sarkar.		Sarkar.	Jodi.	Sarkar.	Sarkar.	Sarkar. 98,86,136 also Wuskere.	Sarkar.	Sarkar.	
7 Registered Numbers of Terminal Tanks surplusing into...	None.	None.	79	None.	None.	None.	69,71,82	None.	97,81		None.	None.	100	None.	83	83	336-84	
8 Surpluses into	No. 19.	None.	7	97	97	97	77	77.	7		83	86	83	83	84	19	243	

Details.

STORAGE DETAILS.																	
9 Area (in acres) of catchment basin excluding that of tanks above	200½	103¼	380⅓	...	286½	267½	746¾	307½	1,045	2,894¾	616½	329	188	542½	1,303½	2,318¾	1,661
10 Supply available in cubic yards per annum 9 in running off	242,605	124,932	460,405	...	346,665	287,375	903,560	372,075	1,264,450	3,500,000	854,865	398,090	227,170	656,425	1,577,235	2,805,680	2,011,020
11 Surplus available from tanks above	None.	None.	49,932	...	None.	None.	224,020	None.	201,135	...	None.	...	398,090	...	624,835	...	1,629,780
12 Total supply available	242,605	124,932	510,337	...	346,665	287,375	1,127,580	372,075	1,465,502	3,500,000	854,865	398,090	625,260	656,425	2,202,100	...	3,640,800
13 Storage capacity of tank in cubic yards	...	...	66,161	...	...	82,199	238,000	82,020	451,635	1,492,678	138,770	28,950	14,998	...	1,425,285	..	1,261,528
14 Irrigable area (in acres) of land below Tank as per measurement	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15 Area irrigated as per Taluk accounts	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...
16 Area it is proposed to irrigate	22	7½	8¼	8½	27	14	75¾	26¼	34¼	210	23	9½	13	21	112	115	157
17 Quantity of water required at 10,000 cubic yards per acre	220,000	75,000	80,250	...	270,000	140,000	757,500	262,500	1,500,000	2,100,000	230,000	95,000	450,000	...	1,120,000	1,150,000	1,570,000
18 Area of contour in square yards, present Kodi level ...	...	...	...	...	...	120,488	252,000	126,666	613,276	1,004,159	125,833	46,666	42,333	...	734,650	...	925,000
19 Area of contour in square yards, proposed Kodi level ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20 Height in yards of proposed above present Kodi ...	...	...	None.	...	...	None.	·66yard	1 yard	1 yard	·66 yards	·33 yards	..	...	...	None.	...	None.
21 Capacity of tank when increased	...	...	...	...	...	...	168,000	126,666	613,276	666,000	42,000	...	...	...	...	...	...
22 Number of times per annum tank is supposed to fill ..	...	...	1½	...	...	2	2	...	1½	...	Less than 1½	...	...	...	...	...	1⅕
23 Surplus available for tanks below	22,000	49,932	430,087	...	76,645	147,375	91,560	109,575	None.	1,342,000	624,865	398,090	...	None.	...	...	2,070,800

24	Short supply	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	FINANCIAL DETAILS.																			
25	Revenue already realized	108	27	Nil.	14	127	52	282	137	176	350	85	None.	39	157	440	106	531
26	Anticipated Revenue	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	Average rate of assessment per acre	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	Return per 10,000 C. yards of storage	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	Amount of estimate	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	Do of contribution, cash	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	Do do labor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	CONSTRUCTIVE DETAILS.																			
32	Length of weirs	...	...	38	...	...	23	74	31	105	150	...	...	...	...	...	...	...
33	To be altered to	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	R. L. of crest of weirs	...	...	..	...	...	...	...	...	..	..	...	...	...	...	...	...	...
35	To be altered to	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	R. L. of cill of sluices	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	R. L. of proposed bund, highest part	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
38	Do do lowest part	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	Minimum breadth of top of bund	..	...	4·50	...	...	4·50	6·00	4·5	6	...	...	...	...	...	...	...	...
40	Front slope	...	...	3 to 1	...	...	3 to 1	1 to 1	3 to 1	3 to 1	...	...	...	...	...	...	...	...
41	Rear slope	...	...	2 to 1	...	...	2 to 1	2 to 1	2 to 1	2 to 1	...	...	...	...	...	...	...	...
	N. B.—Weirs, sluices and similar works should as a rule be distinguished as right and left when facing away from the water in the Tank.																			
	LIST OF SUBSIDIARY WORKS CONNECTED WITH TANKS.																			
42	Weirs	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
43	Sluices	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	..	...
44	Silt dams above	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...
45	Do below	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46	Aqueducts	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
47	Punnaboos	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
48	Dams	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

MEMORANDUM ON THE EXECUTION OF WORK SANCTIONED UNDER THE NEW TANK SCHEME.

1. The preparation and submission of all plans and estimates for works to be carried out under the proposed scheme will be entrusted to the Officers of the Public Works Department.

2. Projects for all series and sub-series or for single tanks will invariably be accompanied by recommendations as to the Department by which the work is to be carried out. As a rule, earth-work and pitching will be carried out by Revenue Officers subject to the general supervision of the Public Works Department, and masonry work, such as sluices and weirs, by the Public Works Department.

3. Projects will therefore be sanctioned under two separate abstracts, one to be carried out by Public Works Department, and the other by Revenue Officers. As soon as sanctioned, the estimates will be sent to the Departments concerned for execution.

4. All work to be carried out by Revenue Officers will be marked out and profiled by the Public Works Department. Timely notice of the probable commencement and completion of this marking out will be given to the Deputy Superintendent by the Assistant Engineer in charge, so that arrangements may be made by the former for putting the work in hand.

5. It is not requisite that the whole length of bund shall be marked out or profiled at once; but the Assistant Engineer in charge will be held responsible that the work is not delayed owing to want of profiles or setting out.

6. Materials for profiles, permanent bench marks, &c., shall be kept in store by the Public Works Department, and provided for in the estimates submitted.

7. Bench and other marks and profiles when set out shall be handed over for maintenance to the Patels or Gaudas of the villages and a receipt taken, after which they will be answerable for their preservation. They will be checked, corrected or re-arranged as may be requisite, on subsequent inspections by Public Works Officers.

8. In fixing profiles, due allowance should be made for subsidence of material, and the allowance made be duly noted.

9. Copy of sanctioned estimate and specification will be entered in a separate book, which with copy of plan will be kept on each tank in progress, by the individual in charge of the work.

10. In this book, the remarks, orders and recommendations of all inspecting officers of or above the Assistant Superintendent or Engineer Grade, will be entered with signature and date. Subordinates will communicate the result of their inspections in the form of a report.

11. The results of all inspections will, when of sufficient importance, be communicated by one Department to the other, with as little delay as possible.

12. Each Department will be responsible for the quantity and quality of work carried out under its supervision, any defects or irregularities being mutually communicated by one Department to the other as soon as detected.

13. Completion reports will be prepared and submitted by Public Works Officers for all works carried out; after which, Revenue Officers will make thei own arrangements for handing over the tanks to the raiyats for up-keep.

By Order,
W. R. JOHNSON, MAJOR,
Under-Secy. to Chief Commr., Irrigation Branch.

BANGALORE,
16th May 1872.

MYSORE CHIEF COMMISSIONER'S OFFICE,

Circular No. 330—2179.

PUBLIC WORKS DEPT. IRRIGATION BRANCH,

Camp Mandya, 5th September 1873.

Circular Memorandum.

To

The Commissioners of Divisions and Irrigation Executive Engineers.

As the existing orders regarding the collection of contributions promised by raiyats towards the repair of irrigation works have, in practice, led to considerable delay in carrying out necessary works, and much correspondence with the Revenue Officers regarding the realization of the raiyats' quota, the Chief Commissioner directs that the following course be adopted in future, superseding the orders conveyed in this Office Nos. 54, 55 and 56 of 3rd June 1869.

II. For every contribution, the raiyat or raiyats must enter into a written engagement, to be duly executed with such formalities as will be binding on them, and in all cases, specifying a certain period for its fulfilment.

III. When the contribution is stipulated to be given in cash, the estimate being sanctioned for the full value of the work as estimated for, will also shew the amount payable by the raiyats. The amount of sanctioned estimate, and the amount recoverable from the raiyats in cash, will be intimated by the sanctioning authority to the Deputy Accountant General, and to the Controller, P. W. Accounts. The Deputy Accountant General will then debit the recoverable amount to a special head in the Civil Books under "Public Debt," such as "contributions for works recoverable from raiyats," and will at the same time afford credit for the amount to the Public Works Department, advising the Deputy Commissioner of the District, who will be held primarily responsible for the recovery of the contribution in due course.

IV. The Controller will apply to the Deputy Accountant General for the necessary funds on ordinary credit orders in favor of the Executive Engineer; and on receiving advice from the Deputy Accountant General of the credit given to the Public Works Department, in usual course, will make the necessary adjusting entries in the Public Works Accounts. The recoveries as they are made, will be credited in the Civil Accounts to the account to which the amount of contribution is charged.

V. In case of failure on the part of the raiyats to pay up the full amount of cash contribution, within the time agreed to, it will be the Deputy Commissioner's duty at once to take steps to enforce the demand, and, should the whole or any portion in any case prove to be irrecoverable, he will without delay apply for the Chief Commissioner's orders for the adjustment of the amount, in such manner as may appear most desirable.

This should be embodied in the original Mutchalika.

VI. When the contribution promised is in labor, the Mutchalika taken from the raiyats is to specify the proportion of work to be executed, month by month, commencing from the date on which, after sanction, a statement of the particulars of the work they are to carry out has been furnished to them by the Executive or Assistant Engineer; also the portions to be taken in hand and completed first; an the work must be carried out strictly in accordance with this specification, or with such orders as may afterwards be passed by the Executive or Assistant Engineer. Should this engagement not be worked up to, the Executive Engineer will give them formal notice that if within fifteen days of receipt of such notice, all arrears be not worked out, and such steps taken, and labor collected, as well in his opinion allow of the work being completed within the time specified, their work will be stopped, and undertaken departmentally, and the full balance of contribution, not worked out, collected by the Deputy Commissioner in cash.

VII. When this procedure is necessary, the Executive Engineer will notify the amount to be recovered in cash, to the Superintending Engineer, who will inform the Deputy Accountant General and Controller, and then the course followed will be precisely the same as if the contribution had been originally promised in cash.

By order,

W. R. JOHNSON, *Major*,

Under-Secy. to Chief Comr. of Mysore, Irrigation Branch.

GOVERNMENT OF MYSORE

PUBLIC WORKS.

NOTIFICATION.

The 2nd October 1873.

No. 65.

With a view to the better conservancy of tanks, and other *irrigation* and *water supply* works in the Province of Mysore, the Chief Commissioner directs the publication of the following Rules, which are to have effect from the 1st of November 1873, and be applicable from that date to all tanks and other works as above mentioned, that may, on or after that date, be formally handed over to the raiyats for up-keep.

By Order,

W. R. JOHNSON, *Major*,

Under-Secy. to Chief Commr. of Mysore, P. W. D.

RULES FOR THE MAINTENANCE OF TANKS.

Rule 1.—The enforcement of the rules for tank maintenance is entrusted to the Patel of the village to which the tank or tanks are attached, and they are to be assisted in this duty by the Hobli Shekdar.

Rule 2.—The individuals to be held responsible for the maintenance and up-keep of the tanks are the Pattedars, Shikmidars, Inamdars and others holding lands attached to the village, either dry or wet, inhabitants of the village, and all others deriving any benefit whatever from the tank, either directly or indirectly.

Rule 3.—The proportion of work to be done by each of the above indicated individuals will be decided by the Patel and Shekdar, according to the amount paid by each to Government, for lands, houses, or other property, &c., attached to the village—such proportion to be constant, no matter what quantity of work has to be carried out. Dissentients to have the ordinary right of appeal to higher authority. The proportion of work to be done by Inamdars will be fixed in the same manner; their lands, &c., being valued at the same rates as those paid for similar property belonging to Sarkar raiyats.

Rule 4.—The works falling under the head of tank maintenance will be ordinary earth and turf work repairs of every description connected with the tanks, and their subsidiary works; excepting such as may be specially exempted, and noted in the tank book as to be kept in repair by Government.

Rule 5.—The above repairs shall, as a rule, be carried out simultaneously at periods to be fixed by the village authorities; but when necessary (as in cases of damage done by rain, floods, &c.,) the requisition of the village authorities for immediate repairs must be at once attended to.

Rule 6.—In case of default by any individual in the execution of his obligations as above laid down, the village authorities above mentioned are empowered, and required, to carry out the portion of work that ought to have been done by the defaulter, by paid labor, the cost being recovered from the defaulter as a revenue demand.

Rule 7.—The village Patel will be held primarily responsible that the tanks are maintained up to the standard laid down for each in the tank book, and it will be the duty of the Shekdar to satisfy himself, by personal inspection in each case, that this has been done.

Rule. 8.—A regular inspection of each tank in his taluk shall be made annually, between the months of December and March, by the Amildar himself, so far as possible; otherwise by the Peshkar, Sheristadar or Taluk Mestri specially deputed for such duty by the Amildar, and the results of this inspection are to be entered in a Register, as per annexed Form A.

Rule 9.—Whenever a tank on such inspection is found not to be up to standard, a second inspection is to be made of the tank prior to the end of April, by which time the repairs must be completed, failing which, the unexecuted repairs will be carried out by the Amildar : and the cost recovered from the defaulters as a revenue demand.

Rule 10.—A duplicate copy of the Register will be forwarded by the Amildar to the District Revenue Officer prior to the 1st June, by which date all tank works should be completed.

Rule 11.—Assistant Commissioners in charge of Sub- Divisions, or otherwise employed in taluks, are expected during the period of jamabandi and on other convenient occasions, personally to inspect as many tanks as possible, and test the accuracy of the taluk returns, entering date of inspection and their remarks in the form attached to the Tank Book for that purpose. The result of their inspection will be communicated to the Deputy Commissioner at once on completion.

Rule 12.—Similar duties will be performed by the Deputy Commissioner, who will be held responsible that the above mentioned rules are duly and intelligently carried out, and not allowed to become a mere form.

Rule 13.—Work ordered to be carried out to any tank by an Officer of the Public Works Department of the Engineer Grade will be done at once on that Officer's responsibility. Should any portion of such work form no part of the duty of the raiyats, the usual Notification of sanction for the same will be submitted by the Amildar through the proper channel. Work considered requisite after inspection by an Officer of the Public Works Department of the Subordinate Grade, will be reported by him without delay to his departmental superior, and in cases of urgency, direct to the Amildar also.

Form A.

Inspection Report on the Tanks in the *Taluk for the Season ending*

Hobli.	Name of Village.	Name of Tank.	Number of Tank.	Date of Inspection.	By whom inspected.	Copy of Observations made in Tank Book.					Signature and remarks.
						Bund if level and up to bench stones, of full width, clear of jungle and weeds, and free from holes or not.	Slopes if full and free from ruts, turing if in good order or otherwise.	Revetment in what condition	Sluice if in or out of order.	Waste-weir if perfectly secure and free from leaks.	
1	2	3	4	5	6	7	8	9	10	11	12

NOTIFICATION.

The 13th March 1874.

No. 326.

The following acts are declared to contsitute channel offences, and are punishable on the Revenue side by officers not below the grade of Amildar with fine not exceeding ten rupees. In extreme cases falling under sections 425, 426, 427, 430, 431 or 432 of the Penal Code, the case should be taken up by a competent Magistrate :—

I.—Obstructing the flow of water in the main or supply channels.

II.—Injuring the main channels by opening escapes for the water or otherwise.

III.—Injuring the channel banks by digging up grass or otherwise.

IV.—Wilfully allowing cattle to stray on the banks of the channels.

V.—Cultivating land within a space of ten feet from the channel banks, after being prohibited by proper authority from doing so.

VI.—Interfering with any sluice or other work in the main channels.

VII.—Widening, deepening or otherwise altering the supply channel to the detriment of land further from the sluice.

VIII.—Wilfully allowing wastage of water flowing from the main channel.

IX.—Neglecting to maintain the earthwork over mudways to the same height and section as the contiguous portions of the embankment.

By order,

H. W. WELLESLEY,
Offg. Secretary.

Proceedings of the Chief Commissioner of Mysore, General Department, 3rd November 1873.

SUBJECT.—*Contributions by raiyats towards the repair of Tanks.*

Requesting Commissionersto favour the Chief Commissioners with early expression of opinion on the subject.

From the Offg. Commissioner of the Nundydroog Division, to the Offg. Secretary to the Chief Commissioner of Mysore, Genl. Dept., No. G. 48, dated, Bangalore, 12th June 1873.

I. In accordance with the second para of your letter to my address, No. 599—G. 19, dated the 5th May 1873, calling for a report on the subject of contributions by raiyats towards the repair of tanks, the amount thereof and the process by which the raiyats are induced to promise them, I have the honor to submit as follows :—

II. The tanks in this Province are very numerous, and for several years past had been gradually deteriorating, by bunds wearing down, and sluices, waste-weirs and stone revetments getting into disorder. The result was that breaches were often occurring, and though the breach of an isolated tank might, comparatively speaking, not do much harm, still the consequences were very serious if the breach occurred in a chain of tanks, and where the breach of No. 1 tank, pouring a sudden volume of water into No. 2 tank caused the latter to breach, till the volume of released water become so great that even the strongest tank bund was unable to resist the violent stream and thus the whole chain of tanks succumbed in turn and were swept away. It cannot be said that Government was idle all this time, or omitted to spend a certain amount yearly, in repairs of tanks ; but efforts at this period were rather desultory, and good projects (*i. e.*, those which promised to speedily recoup the outlay in an increased revenue) and such where the raiyats gave contributions either in money or labor, were first taken in hand, rather than those dilapidated but comparatively unremunerative tanks which were most in need of repair. Even then, many of these good projects used annually to be returned unsanctioned for want of funds. Thus it was that annual repairs fell very far short of the annual deterioration. When at Mysore some years back, I was much struck with this neglect and the apparent oversight of the responsibilities of the village communities as regards their tanks, and lost no time in requiring the raiyats to execute such necessary earth-work to their tanks as would help to ensure their safety. The same system has been pursued in the Bangalore District, and is also, I believe, now in pretty general vogue throughout the Province. The principle of these repairs is that the raiyats are most interested in the up-keep of their tanks ; that Government has neither the money nor agency to prepare innumerable projects every year on strict principles of estimates and regular accounts ; that the raiyats do not demur to performing this work, as this form of customary labor is not a new thing to them ; and that if yearly carried out on a system of timely repairs, the work to be annually performed hereafter will not be much. The value in money of these earth-work repairs to tanks by raiyats, in recent years, it is difficult to estimate, but it must amount to a very large sum.

III. Independent of the systematic repair of tanks by the Irrigation Department on the chain system, a much larger sum than formerly is now placed at the disposal of the Revenue Department for general repairs in each District. The Deputy Commissioner naturally seeks to make the sum allotted to his District go as far as possible, and thus he requires contributions from raiyats either in labor or money. If the District Officer, but more especially the Amildar, be interested in the matter, it is a comparatively easy task to get the raiyats to contribute, and I think they now give their consent more readily than before, because they see that Government is in earnest in the matter and is spending much of its own money, independent of their contributions, in numerous tank projects throughout the country. In fact, it may be stated that the consent of the raiyats to contribute is almost taken as a matter granted. The proportion of contribution is not fixed on any particular scale, but varies from $\frac{1}{3}$, $\frac{1}{4}$ to $\frac{1}{8}$ of the total estimate. Some villages are well populated and the inhabitants well to do, and some the reverse, and these points are taken into consideration when fixing the amount of contribution. Again, some tanks have much well cultivation below, and these garden holders are also called upon to contribute as they indirectly much benefit from the tanks. On the whole, it may be said

that no fixed principle governs this question of fixing the amount of contribution and who are to be called upon to pay the same ; but, as before stated, if the Amildar is intelligent and respected, the matter is carried through very amicably. At times disputes do occur and outsiders especially attempt to evade their responsibilities. Their quota of work is then carried out by paid labor, and recovered from the defaulters as a revenue demand. In other cases again, outsiders come forward with very liberal offers in the way of contributions.

IV. When tanks are being repaired on the chain system by the Irrigation Department, I, as District Officer, used to go to each tank with the Irrigation Engineer, who had the estimate with him. The raiyats were assembled and eventually the amount of their contributions were fixed upon. This at all times was not an easy task, as the raiyats imagining that the Irrigation Department would, or rather must (as the tank is in chain), repair their tanks independent of their contributions, were apt to hang back and plead poverty or even deny the necessity of the work estimated for. Again, as regards chain tanks, the raiyats often delay their portion of earth-work, so that the Irrigation Department has to carry it out and then look to the Revenue Department for re-payment by the raiyats. In addition, the raiyats are not on the same footing of accord with the Irrigation as with the Revenue Department, and thus difficulties arise ; and to obviate the same, some better fixed principle seems required, such for instance as that the raiyats shall do all the turfing and contribute in cash say from $\frac{1}{8}$ to $\frac{1}{10}$ of the estimate.

V. To recapitulate, the subject may be put thus. The raiyats complain, or the District Officer or Amildar observes, that a certain tank requires certain repairs. The raiyats are then called upon to state if they will contribute, and the reply is as a rule in the affirmative. The Amildar or District Officer then fixes the amount, which generally is about $\frac{1}{5}$ or $\frac{1}{4}$ of the amount of estimate. There is no fixed principle to determine this amount, though the circumstances of the villagers are taken into consideration. The only difficulty is, as before stated, when tanks are being systematically repaired in their series, and when the raiyats try to evade contributing, knowing that these tanks must be brought up to standard for the sake of the chain. A difficulty sooner or later as regards contributions in the case of these tanks may arise, and I am disposed to recommend that the quota of the raiyats' contributions should be somewhat less than it is at present, seeing that they will still be required to keep their tanks up to standard and further pay Irrigation Cess.

VI. It is clear that even moderate contributions will effect a vast saving to Government when the total expenditure to be incurred on the whole of the tanks throughout the Province is taken into consideration. To fix the rate of contribution too high will work hardship upon the raiyats, whilst a too low figure will involve as regards Government a great additional outlay.

VII. Further particulars will be found in the communications, on the subject, of the several Deputy Commissioners of this District, copies of which, as per margin, are herewith enclosed.

From Deputy Commissioner, Bangalore District, No. 177, dated 29th May 1873.
Do do Kolár District, No 329—115, dated 21st do.
Do do Tumkur District, No. 165, dated 5th June do.

From the Offg. Deputy Commissioner of the Bangalore District, To the Offg. Commissioner, Nandydroog Division, No. 177, dated, Bangalore, 29th May 1873.

I have the honor to acknowledge your Circular No. 72, dated 16th instant, requesting information in reference to contributions by raiyats towards repairs executed to tanks.

2. The amounts contributed vary in each case according to the circumstances of the raiyats, and are either in cash or in labor. When the works are particularly desired, the raiyats are sometimes willing to bear $\frac{1}{3}$ of the estimated costs, but more frequently the proportion borne by them is $\frac{1}{4}$ or less, and even $\frac{1}{8}$.

3. The works which seem more especially to refer to the question under reference, are those for repairs to tanks, whose safety as well as others, frequently

very important ones, in the same chain would be endangered unless attended to in time.

4. In general, the necessity of the works and their own interests in the same are clearly laid before them, and the raiyats are prevailed upon to freely promise to bear their quota of the expense. Such course however does not always succeed; the raiyats think that they may escape their obligation, by holding back, and that Government would execute the repairs without expense or trouble to themselves. When this happens, the District Officer determines what he considers a fair amount of contribution, and the raiyats are called upon to pay; if they refuse, it is recovered as a revenue balance.

5. I would quote the Circulars marginally noted as authority for obtaining contributions from raiyats, especially No. 3316—307, dated 7th October 1870, from the Division Office.

No. 3316—307 of 7th October 1870.
" 381 of 3rd October 1871.
" 484 of 26th October 1871.

6 Until recently, the tanks in this District were in very bad condition and daily deteriorating, and attention was forced to the subject by numerous demands for repairs. It was then found that Government could not, unaided, meet all those demands, and that even if they then did, they could not possibly continue to do so. As these tanks are very numerous and scattered over the country and are beneficial to raiyats and to their cattle, it seems but fair that they should help in their repairs.

7. In conclusion, from an inspection of these tanks, many of which are small, but beyond proportion to the revenue derived from the lands under them, it seems to me to be not improbable that they must have anciently been constructed by the village community themselves, who in the course of time have either lost sight of or escaped their responsibility to keep up the same.

From the Deputy Commissioner of the Kolar District, to the Commissioner, Nundydroog Division, No. 329—115, dated, Kolar, 21st May 1873.

I have the honor to acknowledge the receipt of your Official Memorandum No. 98 of May 1873, giving cover to copy of letter No. 599—19 of the 5th instant, from the Secretary to the Chief Commissioner on the subject of recovering contributions from the raiyats towards irrigation works. The Chief Commissioner has been pleased to direct the submission of a report on "the process by which the raiyats are induced to promise" these contributions, and "the amount of them." I beg leave to state briefly the circumstances under which this system was introduced by me into this District.

2. The most peculiar feature of this District is, that it is studded with a very large number of tanks, the majority of which are petty ones, though, in the aggregate, they yield a large amount of wet revenue to the Government, and there could be no doubt that the greater number of these tanks must have been originally constructed by the founders of the villages, or by the village community, as the small amount of revenue derivable from each individual tank could not have justified any Government to spend such disproportionately large sums of money in their construction. These tanks, however, have been gradually allowed to fall into disorder, as the policy pursued by Purnaiya deprived the Patels of their influence and position in their respective villages and thereby diminished the interest they naturally took in such works before. The result of this deplorable state of things was not however much felt so long as the wet lands were cultivated on batayi tenure, the raiyats tilling as much land as the scanty supply of water in the tanks could irrigate, and the Government being content with the revenue realized by the sale of their share of the crops, though it fluctuated according to the season and the price of grain.

3. Soon after I took charge of the District, I found an enormous extent of land under batayi cultivation, and having, with the sanction of the higher authority, converted a great portion of it into money assessment, the raiyats began to clamour about the condition of the tanks in the District, the restoration of which was found to be a matter of absolute necessity, in order to enable the raiyats to pay the assess-

ment on their lands This point, which is a most important one, as affecting the Government as well as the raiyats, occupied my attention, and, after much consideration, I arrived at the conclusion that it was impossible for the Government to bear the whole cost of restoring all these tanks, and that the desired object could not be attained, unless the raiyats were called upon to co-operate with the Government in the matter.

4. This led me to try the former practice of exacting labor from the raiyats; but I deemed it unadvisable to revive it, as it could not be enforced without winking at all sorts of iniquitous acts on the part of petty officials in exacting labor from the raiyats.

5. I then tried the system (*a*) proposed by Mr. Bowring. This was "to effect the restoration of tanks by means of the villagers, the Government contributing towards the work in rateable proportion to the prospective remuneration of each project" or what may in other words be called the grant-in-aid system. Under this system the raiyats were first to execute a certain amount of work according to the estimate, and then to draw by instalments the quota promised by the Government as grant-in-aid which was fixed in consideration of the merits of each case. This system too did not answer, as it was found difficult to get the absent land-holders and the influential and non-agricultural classes to contribute their share of the labor like the poor and ignorant raiyats on the spot who of course were unable to fulfil their agreement.

(*a*) *Vide* para 10 of Secretary's letter No. 2078—R. 39 of 8th August 1866.

6. On a consideration of all the difficulties which had beset the above system, I thought that the best method would be to obtain contributions in cash from the raiyats instead of giving them a grant-in-aid, and have the work executed under the supervision of Government Officers. I then impressed on the raiyats the advantages of this system over the others, as under this, no one, whether influential or non-influential, agriculturist or non-agriculturist, could evade the payment of his quota, and convinced them of their obligation to repair and maintain in good order the tanks built by their forefathers at their own cost or at the cost of the village community. The intelligent among them perceived the justice of my proposal that they should bear a portion of the cost of repairing their tanks, and agreed to the scheme being carried out. This matter was fully (*b*) discussed when I had the honor of being a member of the Committee convened by Mr. Bowring on the occasion of Colonel Strachey's visit to Mysore in the beginning of 1868, and was finally approved of by the Irrigation Committee convened at Bangalore by order of the Chief Commissioner. *Vide* paras 34 to 37 of its (*c*) Resolution.

(*b*) *Vide* Colonel Strachey's memo, dated 22nd February 1868, received with your Circular No. 4497—459, dated 20th March 1868.

(*c*) Received with your docket No. 4722—525 of 22nd March 1869.

7. From that period I commenced to levy these contributions in cash, and it will be observed from the (*d*) marginally noted table that this item of revenue under "Public Works" has increased from Rs. 2,162 in 1869-70 to the large sum of Rs. 16,200 during the past year, as already brought to notice in para 74 of my Administration Report submitted last week. The contributions are collected like all other revenue (*e*) demands, but I am glad to state that no extreme measures have hitherto been resorted to for its recovery, though a little difficulty has been experienced in a few cases in which the land-holders belong to other than the agricultural class. Indeed, the cultivating raiyats, seeing the advantages of this system, have willingly come forward in many instances and voluntarily paid up their contributions.

	Rs.	A.	P.
(*d*) In 1869—70	2,162	0	0
„ 1870—71	6,738	0	0
„ 1871—72	9,191	0	0
„ 1872—73	16,200	0	0

(*e*) *Vide* Colonel Meade's order conveyed in letter No. 97, dated 13th June 1871, from the Under-Secretary to the Chief Commissioner, Irrigation Branch.

8. The principle upon which I collect these contributions is to fix the rateable proportion of the amount of contribution to be paid by the raiyats in each case with reference to the period within which the outlay can be recouped, and to apportion

the amount that each raiyat has to pay according to the extent of his holding under the tank. This is done by getting an estimate, providing for the full work required to put the tank in thorough order, framed at first, and the raiyats' quota is then fixed according to the merits of each case. The amount of this quota is then divided into shares in order to ascertain how much is due upon each kudu, kandi or acre, and all the parties holding the lands on assessment under the tank are then called upon to pay accordingly.

9. This system has worked exceedingly well and has been attended with marked success in this District.

From the Offg. Deputy Commissioner of the Tumkur District,
To the Offg. Commissioner of the Nundydroog Division,
No. 165, dated, Tumkur, 5th June 1873.

With reference to your Circular No. 72 of 16th ultimo and docket No. 93 of the 29th idem, calling for a report on the system of raiyats' contributions towards the repairs of tanks, I have the honor to state on account of the number of tanks requiring repairs those which the raiyats offer to help in repairing are as a rule first taken in hand, and under your Circular Order No. 381 of 3rd October 1871; the raiyats generally subscribe one-fourth of the estimated cost of repairs. In some instances where they offer to do the work in lieu of the one-fourth share of money, they are permitted to do so.

No. 4312—G. 69, DATED, BANGALORE, 3RD NOVEMBER 1873.

ORDER THEREON.—There are two classes of works which may be regarded as coming under the terms of the question at issue in the matter reported on above, *viz* :—

(1) *Ordinary repairs* to the earth-work of tank bunds, for which the raiyats have been always theoretically responsible, where there is no Kodigi Inam for the conservancy of the tank; and (2) the work necessary for the *restoration* of a ruined tank or one out of use.

2. For the former, the raiyats are fairly responsible, and it is the duty of the Deputy Commissioner to arrange for the execution of such repairs, and to require all raiyats concerned therein to aid in their being carried out, either by labor or contributions.

3. As regards the latter, the case is different, and it is essential that the raiyats concerned shall not merely agree to the work, but *shall formally bind themselves* to provide the service or money required for its execution. All the orders that have been issued on this subject by the Chief Commissioner have been clear on this point, and lay down that no improper compulsion or pressure should be put on a community in such a case.

4. Where, however, the agreement has been executed, and the work taken in hand on the strength of the agreement, it should be duly enforced, and any attempt to evade its conditions properly checked.

5. Under the impulse that has of late been given to tank restorations, the time seems to have arrived for laying down definite rules having the force of law on this subject in connection with those lately promulgated in the Irrigation Department, in the case of tanks brought up to standard by Government and made over to the raiyats for future maintenance.

6 The principle seems just, in a Province so dependent on its tanks for a water-supply as Mysore is, that every community should be bound by acts of a reasonable majority of its members, in respect of the restoration of a tank common to all, and on which the general prosperity of a village depends; and the Chief Commissioner considers that, where two-thirds or three-fourths of the raiyats concerned are willing to enter into an engagement of the sort, the minority should be *required* to assent likewise.

7. The proportion of the cost of a work that the raiyats should make up is a matter for settlement by the Deputy Commissioner in communication, if necessary, with the Executive Engineer.

8. It is impossible to lay down any rule as to the degree of pressure or influence, a Revenue Officer may use to obtain the consent of a community to make good such portion; but it may be broadly stated that such pressure should not be carried beyond the exercise of reasonable *influence* on his part.

9. In respect of cases that have already occurred, the Chief Commissioner is not disposed to interfere where the works that have been carried out have been agreed to by a large majority of a community, but every such case must be dealt with on its own special merits.

10. The Commissioners of the Divisions are requested to give their careful consideration to the subject of the above remarks and favor the Chief Commissioner with an early expression of their views thereon.

H. W. WELLESLEY,
Offg. Secretary.

To—All Commissioners of Divisions.

Notification by the Chief Commissioner of Mysore.

No. 326.

The 13th March 1874.

The following acts are declared to constitute channel offences and are punishable on the revenue side by Officers not below the grade of Amildar with fine not exceeding 10 Rupees. In extreme cases falling under Sections 425, 426, 427, 430, 431 or 432 of the Penal Code, the case should be taken up by a competent Magistrate.

I. Obstructing the flow of water in the main or supply channels.

II. Injuring the main channels by opening escapes for the water or otherwise.

III. Injuring the channel banks by digging up grass or otherwise.

IV. Wilfully allowing cattle to stray on the banks of the channels.

V. Cultivating land within a space of ten feet from the channel banks, after being prohibited by proper authority from doing so.

VI. Interfering with any sluice or other work in the main channels.

VII. Widening, deepening or otherwise altering the supply channel to the detriment of land further from the sluice.

VIII. Wilfully allowing wastage of water flowing from the main channel.

IX. Neglecting to maintain the earth-work over mudways to the same height and section as the contiguous portions of the embankment.

By Order,

H. W. Wellesley,

Offg. Secretary

Proceedings of the Chief Commissioner of Mysore, Department of Revenue, Agriculture and Commence, 21st September 1874.

From the Officiating Secretary to the Chief Commissioner of Mysore, to the Secretary to the Government of India, Foreign Department, Calcutta, No. 1777—*R.* 42, *dated, Bangalore, 3rd June* 1874.

I am directed to submit, for the information and orders of His Excellency the Viceroy and Governor-General in Council, a report on the levy, in connection with the Survey Settlement now in progress in the Province, of a local irrigation cess of one anna, on each rupee of assessment, on wet crop lands, which appears to the Chief Commissioner to require reconsideration, under the circumstances hereinafter set forth.

2. From the information Colonel Meade has been able to obtain regarding the origin of this cess it would seem that the necessity for imposing some such special levy had long been entertained, and that Mr. Bowring even contemplated the extension of its incidence to dry crop (or unirrigated) cultivation, on the ground that as the raiyats generally were dependent on the due maintenance of the tank works of the Province for their water-supply for ordinary use, quite irrespective of the purposes of irrigation to which these works were applied, it would be proper to require *all* land under cultivation to contribute its share towards such maintenance. It is stated that, under this view, Mr. Bowring at one time contemplated the imposition of a special cess for this purpose of two annas on each rupee of assessment on wet crop, and one anna similarly on that on dry crop lands throughout the Province.

3. Subsequently, the Survey Commissioner, Colonel Anderson, proposed that a cess of one anna should be levied on all wet crop lands only, to be applied to the systematic clearing out of the tanks, from the lands irrigated by which such cess in each case was realized, but the latter measure was thought to be impracticable, and the question appears to have remained in abeyance till the assembly of a Committee held at Bangalore, in March 1868, to consider Colonel Strachey's note on "Irrigation in Mysore," dated 22nd February 1867.

4. In para 2 of the memorandum that was drawn up of the proceedings of the Committee, of which a copy was forwarded to your Office with the letter noted in the margin, it was proposed, under the head of "Local Funds," that "An additional anna in the rupee will be payable from all irrigated lands and the amount thus realized will be devoted solely to the repair of tanks."

No. 198—13, dated 15th April 1868.

The Committee further proposed to divide all the irrigation works of the Province into two classes, the reconstruction, improvement and maintenance of those in the 1st class, which should comprise all the larger and more important works, being entirely in the hands of the Department, Public Works; while, as regarded those in the 2nd class which should include all the minor and less important works it stated that, "It fully recognized the expediency of transferring to raiyats the "obligation of maintaining the numerous small tanks which exist in Mysore, "and subsidiary works under channels, the existing actual condition of tanks, "not in thorough order, being considered for the present as the standard up to "which such tanks should be so maintained by the raiyats."

5. In accordance with these suggestions, a special local irrigation cess was thereupon imposed, of one anna on each rupee of assessment on all wet crop lands in the settled Taluks, due provision for its levy being subsequently made in the revised survey guarantee which was drown up and published under Mr. Bowring's orders, by Notification No. 198, dated 9th February 1870, after the assembly of another special Committee to consider the question of, and to lay down rules regarding the management of the several classes of irrigation works in the Province.

6. The rules quoted in the margin were laid down in the revised guarantee, regarding (1) the obligations of the raiyats in connection with the maintenance of irrigation works ; and (2) the imposition and utilization of the local irrigation cess ; and it will be seen that they provided, under the former head, for the maintenance and up-keep by the raiyats concerned, of all the minor class of works not under the direct management of the Irrigation Department ; and under the latter, for the application of the proceeds of the irrigation cess to the repair, improvement, and re-construction of such works, but not to their maintenance ; the cess realized, however, from the wet lands dependent on the larger class of works, the charge of which is retained by the Irrigation Department, being applicable to the maintenance of that class of works.

Section VI. It is imperative on the owners and occupiers of land lying under tanks and works, the property of Government other than those under the direct management of the Irrigation Department, to maintain the up-keep of such tanks and works after they have been brought up to standard. In case such up-keep shall not duly maintained, it shall be competent to Government to maintain the up-keep of such tanks and works, and the cost of the same shall be rateably distributed amongst the raiyats and Inamdars according to the survey valuation of their respective holdings, and such amount shall be recovered as a regular revenue demand.

Local Funds.

Section XIV. On all wet crop lands an additional anna on each rupee shall be imposed, which shall be devoted exclusively to repairs, improvements and reconstruction of works of irrigation but not to maintenance, except (as) to tanks and works the charge of which is taken by the Irrigation Department.

7. The necessity that existed for framing some rules for the administration of the cess was brought to the Chief Commissioner's notice in 1872 ; and he then, for the first time, became aware that there was considerable difference of opinion regarding the necessity for the levy of the cess at all, and that much difficulty would be experienced in its general imposition throughout the Province, and in its administration in an efficient manner for the benefit of those contributing to it, as contemplated in the survey guarantee.

8. In the first place, it was urged that, as, under the provisions of the survey guarantee already quoted, the obligation of the future maintenance of all the minor class of works which form the great bulk of the irrigation works of the Province was imposed on the raiyats, and the new tank scheme provides for the reconstruction and improvement of all such works and for their being brought up to a standard of security and efficiency at the cost of Government, there would be no objects of this nature to which the cess would be applied, as contemplated in Rule XIV of the survey guarantee.

9. It further appeared that a large portion of the wet crop cultivation as in the Malnad Taluks adjoining the Western Ghats and some other parts of the Province, was carried on from natural springs and without the aid of, or with but little aid, from artificial works, and that the cess could be utilized but little, or not at all, in such cases, and would probably be regarded by the raiyats as an exaction without an object.

10. Lastly, as regarded the administration of the cess, there was an obvious difficulty in providing for the due utilization on each of the individual works, from the lands dependent on which it was levied, of the small sums that would be available in each case ; and it was indeed not clear what could be done with it, so long as the work of bringing the works up to standard was carried out at the cost of Government, and their future maintenance thereat was imposed on the raiyats without reference to the cess.

11. The Chief Commissioner had taken the opportunity of the presence at Bangalore of the Survey Commissioner and Superintendent, to hold a meeting of the principal Officers of the Administration at head-quarters, under his own presidency, to consider the questions connected with the utilization of the Local Funds of the Province, and he was much impressed with the arguments that were urged on the above points, by several Officers on the occasion, against the continued levy of the irrigation cess.

12. Looking, however, at the fact that the cess had been imposed after very full consideration by his predecessor, and that it would, on the completion of the settlement, realize upwards of two lakhs in the aggregate annually, he did not feel justified in proposing its abolition, till he was satisfied, after further enquiry, that it could not be utilized, as had been contemplated by him in connection with, though as a separate branch of, the ordinary District Local Funds, or under some other arrangement that would admit of its being turned to account with advantage to the State and the people, for the purpose for which it had been introduced.

13. On this latter point, it had for some time appeared to Colonel Meade that the only mode of turning the proceeds of the cess to proper account was to place its administration wholly in the hands of the local Revenue Officers, to enable them to maintain an adequate permanent establishment including, if necessary a District Irrigation Engineer (1) for the systematic and constant inspection of all the class for tanks brought up to standard and made over to the raiyats for up-keep ; and (2) of the execution of such repairs and improvements thereto, as might from time to time be necessary, but which the raiyats could not be expected to carry out. The proceeds of the cess would, doubtless, in due time provide fully for the above purposes, and its efficient administration through District Committees, as proposed *in the case of the ordinary Local Funds, would, it was hoped, meet the future requirements of this most important class of works and relieve the Irrigation Department altogether from the necessity of interference of any sort with them hereafter, except, possibly, in some special instance in which it might be found advisable to consult it.

*In No. 6434—389, dated 13th February 1873 to Foreign Department.

14. The extension of the settlement to the Malnad Taluks, in which, as already explained, the wet cultivation is mostly carried on from natural springs, has rendered it now necessary to deal with this question without further delay, and after a full consideration of all the circumstances connected with the levy of the cess, and the difficulties that will attend its satisfactory administration, if such levy is continued in its present form, Colonel Meade has come to the conclusion that it is his duty to recommend its abolition and to endeavour to devise some other means of providing for the object for which it was imposed.

15. This opinion is concurred in by the Settlement Commissioner, who, in a recent memorandum on local cesses in Mysore, remarks that—" Constant discussion " and difficulty occur regarding the levy of the irrigation cess, which is beyond " all doubt the cause of much dissatisfaction among the people, who look on it " as an extra imposition, and very differently to what they would do if the " amount was included in the ordinary land revenue. I would suggest the ad- " visability of abolishing this cess. The amount of it need not be a dead loss to " the State, either in the case of villages already settled or to be settled for the " future. The incidence of this cess has always been taken into account in " estimating the future revenue of a taluk under settlement, and the non-exist- " ence of this cess would be taken into account in fixing the revenue of taluks " for settlement in the future."

It should be added that Colonel Anderson, though unconcerned in its original imposition, for he was absent from India when it was introduced, as explained above, shared the Chief Commissioner's views as to the inadvisability of hastily abandoning the cess, and that the opinion he has thus given has been formed after a full consideration of the difficulties attending (1) its general levy throught the Province, and (2) its utilization, as a " Local Fund," for the direct benefit of those contributing to it, in a way to satisfy them that they really get some return for their contributions.

16. In the event of the abolition of the cess being carried out, the case of its levy in the taluks which have been already settled will require special consideration, but no difficulty is anticipated in dealing with it satisfactorily, as soon as the measures to be adopted in substitution of the separate collection of the cess as a " Local Fund " are decided on.

With regard to the as-yet unsettled taluks, the incidence of the cess would merge in the general assessment, which would be *pro tanto* raised consequent on its

abolition; the existence of this impost having hitherto been taken into account in fixing the rates of assessment on the several classes of wet lands, which have been lowered by the amount of such incidence.

17. The Chief Commissioner is convinced of the great importance, with reference especially to the future arrangements for the government of the Province, of making suitable provision for the entire control of all tanks made over to the raiyats for up-keep being vested in the local Revenue Officers, as stated in para 13 of this letter, and he would therefore strongly advocate, as the simplest and most convenient mode of giving effect to this view, that while the cess in its separate form is abolished, its equivalent as fixed by the Survey Department at the settlement of each taluk, or such portion of the same as may be assigned for the purpose with the sanction of Government, shall be set apart as an allotment to form a "District Irrigation Fund," under the control of the District Officer and to be administered by the District Local Fund Committee precisely in the same manner as the ordinary Local Funds of the District.

In the event of this measure being approved by His Excellency in Council, Colonel Meade would further recommend that the amount so assigned at the settlement of each taluk shall remain unaltered during the whole term of currency of the settlement.

18. With regard to the case (1) of the Malnad Taluks, in which there are but few artificial irrigation works, and (2) of the channels and larger tanks that remain under the charge of the Irrigation Department, the allotment for the District Irrigation Fund should, in the case of the former, be limited to such sum as is absolutely needed for the purpose for which it is granted; and, in that of the latter, a fair proportion, representing the equivalent of the cess that would be realized, if still in force, from the lands dependent on them, should be annually transferred to the Irrigation Department, as a grant-in-aid from the "District Irrigation Funds," for the maintenance of such channels and tanks.

19. The case of the Inamdars of the Province, whose lands are subject equally with those of raiyats, to the incidence of the Local Fund cesses, will require special orders, if the course recommended herein be adopted; but as they are already universally liable for the cess, there will be no difficulty in providing for their continuing to contribute an equitable amount towards its objects under the new arrangements.

20. In conclusion, I am directed to state that Colonel Meade has every reason to believe that the measures proposed herein will, if sanctioned, have the general concurrence of the most experienced Officers, European and Native, of the Province, and he has no hesitation in strongly recommending them for the favorable consideration of His Excellency in Council.

Names of the Officers who attended the Committee convened in March 1868 for the purpose of discussing questions in connection with the irrigation cess in Mysore:—

L. B. Bowring, Esq., Commissioner.
Captain J. A. Campbell, Secretary.
Major Prescott, Survey Commissioner.
Captain Grant, Superintendent of Survey.
Major Sankey, Chief Engineer.
Captain Campbell, Assistant Engineer.
Major J. L. Pearse, Superintendent of Nundydroog Division.
Mr. Arunachalam Mudaliar, Head Sheristadar.
Mr. Krishnaiengar, Deputy Supt. of Kolar.

From the Secretary to the Government of India, to the Chief Commissioner of Mysore, Foreign Department, Revenue, No. 210 R., dated Fort William, 27th August 1874.

In reply to your Officiating Secretary's letter No. 1777—42 R., dated 3rd June last, I am directed to state that the Honorable the President in Council sanctions your proposal that the irrigation cess hitherto levied on wet crop lands in Mysore shall be abolished, and that for it shall be substituted the arrangements recommended in your 17th and 18th paragraphs, on the understanding that a sufficient assignment will be made from the enhanced land revenue to cover the charges which the irrigation cess was designed to meet.

Proceedings of the Chief Commissioner of Mysore, Department of Revenue, Agriculture and Commerce, 21st September 1874.

No. 4469—Rev. 297, dated Bangalore, 21st September 1874.

Order thereon.—Ordered, that a copy of the foregoing letter and of that to which it is a reply be forwarded to the Survey Commissioner with a request that he will submit for the Chief Commissioner's approval, at as early a date as possible, the amendment rendered necessary in the Survey guarantee under the head of "Local Funds" consequently on the adoption of the measure now sanctioned.

2. The amendment should state that the irrigation cess having been abolished as a separate levy, its incidence will hereafter merge in the ordinary assessment of wet lands, and that, at the settlement of each taluk, a lumpsum equivalent, excepting in the case of the Malnad Taluks, to the amount representing the cess that has so merged in the assessment, shall be set apart by the Settlement Officer from the annual revenue of the taluk to form the "District Irrigation Fund," which will be administered by the District Committee in the same way as the ordinary Local Fund.

In the case of the Malnad Taluks, the sum to be so allotted will be limited to such portion of the actual equivalent of the cess as may be fairly needed for the purpose, in connection with the artificial works in the taluk, for which the maintenance of a District Irrigation Fund is proposed. The sum, whatever the amount, so allotted at the settlement will remain as the fixed allotment for this purpose during the currency of the settlement.

3. The course to be taken with regard to the irrigation cess now leviable in the taluks already settled will require special consideration, and the Survey Commissioner is requested to suggest the measures he would propose regarding it.

4. With respect to the case of Inamdars and Kayamgutta and Jodidars, it may fairly be a question how the change now sanctioned should affect them. The principle has been already laid down that these classes shall pay local cesses precisely as ordinary raiyats, and as the measure under consideration merely alters the mode of realizing and allotting the cess, it does not necessarily affect that principle or the rules heretofore in force for its application, so far as the said classes are concerned. The cess may therefore continue to be levied from these classes as heretofore, and its amount can be paid over to the District Irrigation Fund, if that course is deemed fitting.

5. The allotment made by the Settlement Officer will be deducted from the revenue of the taluk and transferred to the credit of the District Committee under the head of "District Irrigation Fund." The Chief Commissioner believes that, as the allotment is to be a lump sum, this can be arranged, without difficulty, by the District Officers in communication with the Deputy Accountant General.

6. On the receipt of the Survey Commissioner's reply, the requisite orders will be passed to give effect to the measure under consideration.

H. WELLESLEY,
Offg. Secretary.

To—The Survey and Settlement Commissioner.

Notification by the Chief Commissioner of Mysore.

No. 62. *The 7th May* 1875.

The following rules are prescribed for the guidance of District Committees in the administration of the District Irrigation Fund, which has been vested in them by Chief Commissioner's Notification No. 341 of the 11th February 1875 :—

I. The District Irrigation Fund shall form a distinct branch of Local Funds and shall be administered by District Committees in the same manner as ordinary Local Funds, but shall be expended exclusively on purposes of Irrigation in each Taluk.

II. The fund shall consist of the lump sum which will be set apart by the Settlement Officer for each Taluk as prescribed in para XIV of the Survey Guarantee (as amended by Notification No. 341, dated 11th February 1875). The sum so set apart shall be a fixed allotment during the currency of the settlement, and the same amount will be annually available for purposes hereinafter set forth, subject to such periodical revision as circumstances may call for.

III. The Irrigation Fund shall be available—

(1) for the maintenance of a suitable establishment for the inspection of the tanks in each Taluk,

(2) for the repair of the masonry works of such tanks as have been brought up to standard and made over to the raiyats for up-keep,

(3) for the provision of grants, in special and exceptional cases, in aid of such other indispensable repairs which tanks thus brought up to standard may need in excess of the raiyat's ability to execute the repairs, and

(4) for the provision of grants-in-aid towards the repair of channels, the maintenance of which rests with the Irrigation Department.

IV. The determination of the manner in which the Irrigation Fund shall be utilized and of the appropriation to be made therefrom shall be carried out subject to the provisions of the Rule V following, in the manner prescribed for ordinary Local Funds, the same rules being applicable as to the preparation of accounts, framing of estimates of expenditure, powers of sanction, &c.

V. The allotments for the Irrigation Fund shall as far as possible be expended upon the tanks in the Taluks to which they belong. But the District Committees shall be competent to apply any portion of the sums set apart for expenditure in one Taluk to other tanks of the same series in neighbouring Taluks, and to any general purpose connected with the Irrigation works of the District to which the District Committee may be of opinion the fund of each Taluk should be required to contribute.

VI. Holders of Inam and Kayamgutta villages shall be entitled to receive such grants as may be allotted by the Local Fund Committees, not exceeding the sum contributed in each case by them for the repairs of their village tanks. They will in addition have the benefit of the establishment maintained from the fund in preparing estimates and supervising the work done by them. If, notwithstanding this aid, such tanks, more especially those lying in a series, are not maintained in a proper condition, or if the repairs are not executed with due despatch or efficiently, it will be competent to the District Fund Committee to take the work in hand and carry it out, the excess outlay being recovered from the Inamdars as a revenue demand.

VII. Where the ordinary Local Fund establishment is sufficient for the work of this Irrigation Fund in Taluks in which the former is established, it may be employed for the purpose, the cost being proportionately shared between the two funds.

VIII. Of the seven non-official members of every District Committee as constituted by Notification No. 110 of the 4th July 1874, it will be desirable that at least three shall be holders of irrigated land in the District.

Notes of orders regarding the utilization of the Irrigation Cess.

Para 2 of notes of Proceedings of Committee assembled at Bangalore from 17th to 22nd March 1868.

An additional anna in the rupee will be payable from all irrigatedlands and the amount thus realized will be *devoted solely* to the repairs of tanks.

Survey guarantee of the Harihar Taluk. *Vide* Mysore Gazette, dated 30th May 1868.

Para 5.—On all wet crop lands, an additional one anna in the rupee will be imposed which will be devoted *exclusively* to the *repair and maintenance of tanks.*

Survey guarantee published with Chief Commissioner's Notification No. 198, dated 9th February 1870.

Para XIV.—On all wet crop lands, an additional anna in each rupee shall be imposed, which shall be devoted *exclusively to repairs, improvements, and reconstruction of works of Irrigation, but not to maintenance, except (as) to tanks and works, the charge of which is taken by the Irrigation Department.*

Note.—The Irrigation Cess of one anna in the rupee was abolished as a separate levy in February 1875, and was merged in the land assessment.

Rules for the administration of the District Irrigaton Fund. Notification No. 62, dated 7th May 1875.

Para III.—The Irrigation Fund shall be available—

(1) for the maintenance of a suitable establishment for the inspection of the tanks in each taluk,

(2) for the repair of the masonry works of such tanks as have been brought up to standard and made over to the raiyats for up-keep,

(3) for the provision of grants, in special and exceptional cases, in aid of such other indispensable repairs which tanks thus brought up to standard may need in excess of the raiyat's ability to execute the repairs, and

(4) for the provision of grants-in-aid towards the repair of channels, the maintenance of which rests with the Irrigation Department.

Draft Tank Code framed in April 1878, page 222 of printed records relating to the tank system.

Chapter IV, Section 3.—The first charge on the Irrigation Cess shall be ordinary repairs of the *Government tanks* and the pay of the establishment kept up for the inspection of village tanks.

Chapter IV, Section 4.—The balance may be allotted by the District Local Funds Committee at their discretion, either to carrying on works of improvement on Government tanks, or as contributions towards the re-construction of village tanks, which have breached through no neglect of their duties on the part of the raiyats, but through uncontrollable causes, or the improvement and restoration of such as have fallen into disrepair as provided in Chapter II, Section 9.

Sir James Gordon's Minute on the draft Tank Code, dated 13th August 1878. Paras 21 and 26, (2) (pages 230 & 231 of printed book).

The Irrigation Cess shall be devoted towards the restoration and maintenance of "Government tanks."

Proceedings of the Chief Commissioner of Mysore, Department of Revenue, Agriculture and Commerce, 30th September 1875.

From the Commissioner, Ashtagram Division, to the Offg. Secretary to the Chief Commissioner of Mysore, General Department, Genl. No. 459—Rev. 64, dated, Mysore, 8th September 1875.

In forwarding herewith copy of letter No. 849 of the 27th ultimo, from the Deputy Commissioner, Hassan, regarding the reading of para 3 of the Chief Commissioner's Proceedings No. 2919—7 of the 7th July 1875, on the subject of rights to trees growing on tank-bunds, I have the honor to state that it appears to me that under the para referred to, it is necessary for the Deputy Commissioner to issue a notice and investigate and decide any claims put forward to trees growing on bunds before they are felled, but as the para is open to doubt, I submit the matter for the instructions of the Chief Commissioner.

From the Offg. Deputy Commissioner, Hassan District, to the Commissioner, Ashtagram Division, No. 849, dated, Hassan, 27th August 1875

I have the honor to bring the following to your notice, and to request your orders on the same for future guidance,

On the 14th August 1875, the Amildar of Channarayapatna, in his report No. 321, informed me that the Irrigation Department had cut down certain trees on the bund of Madalgere and other tanks; this report I forwarded to the Executive Engineer, Hemavati Division, with Kanarese Yadast No. 73 of 19th instant, and drew that officer's attention to para 3 of Chief Commissioner's Proceedings No. 2919—7 of 7th July 1875.

That officer in reply states that, according to those Proceedings, he does not consider that it is necessary to inform me prior to cutting down trees, but simply to obtain my orders regarding the disposal of the same.

As the wording of para 3 in my opinion is open to doubt, I would respectfully beg to be informed whether my reading of it or that of the Executive Engineer is correct.

No. 5379—Rev. 52, dated, Bangalore, 30th September 1875.

Order thereon.—On the reference submitted by the Commissioner of the Ashtagram Division, the Officiating Chief Commissioner directs that when it becomes necessary to fell timber trees standing on the bunds of tanks, prior to operations being commenced by the Irrigation Department, timely intimation shall be given by that Department to the Deputy Commissioner, and if such trees are not removed by those whose claims to ownership have been admitted by the Revenue Authorities, within the time specified by the Executive Engineer, the latter, or other Officer of the Irrigation Department superintending the work, shall be at liberty to direct their removal.

T. CLARKE, *Offg. Secretary.*

To—The Commissioner, Ashtagram Division.
The Commissioners, Nundydroog and Nagar Divisions.
The Secretary, D. P. W.
The Superintending Engineer, Irrigation Works.

Proceedings of the Chief Commissioner of Mysore, Department of Revenue, Agriculture and Commerce, 7th July 1875.

From the Offg. Superintending Engineer of Irrigation Works, Mysore, To the Secretary to the Chief Commissioner of Mysore, General Department, No. 849, dated Bangalore, 31st March 1874.

Has the honor to request the favor of being supplied, for reference, with any orders that might have been passed by the Local Administration or the Government of India bearing on the subject of the right of ownership of trees growing on tank bunds, &c.

2. Letter No. 141 of 22nd March 1865, from Offg. Under-Secretary to Government of India, Foreign Department, to the address of the Chief Commissioner of Mysore, would, it is believed, lead to the correspondence on the subject.

From the Offg. Superintending Engineer of Irrigation Works, to the Offg. Secretary to the Chief Commissioner of Mysore, General Department, No. 1650, dated Bangalore, 3rd June 1875.

I have the honor to request you will be good enough to favor me with an early reply to this Office No. 1736 of the 26th June 1874, asking for information on the subject of the ownership of trees growing on tank bunds, regarding which three reminders were sent to your Office in the communications noted in the margin.

1. No. 2502 of 16th September 1874.
2. No. 3069 of 16th November 1874.
3. No. 677 of 1st March 1875.

No. 2919—Rev. 7, dated Bangalore, 7th July 1875.

Order.—The Officiating Chief Commissioner observes that no definite orders seem to have been passed touching rights in trees growing on tank bunds.

2. Speaking generally, trees growing on the bunds of tanks belonging to Inam villages of any description must be regarded as the property of the land-holder, and similarly the Government can claim the right of disposing of trees on the bunds of Government tanks, excepting in the case of what are termed "Sarkar Topes" planted by individuals for charitable purposes, and of trees which villagers have been of recent years permitted to plant, with the privilege annexed of enjoying their produce, &c.

3. The Officiating Chief Commissioner directs that whenever it may become necessary to remove trees on the bunds of Government tanks, notice should be given in the usual manner by the Deputy Commissioner. Any claims thereupon put forward will be investigated by the Deputy Commissioner, and if his decision be in favor of the claimants, the timber should be made over to them.

4. In Inam villages the tanks of which are being repaired by the Irrigation Department, such trees as it is found necessary to remove may be felled with the sanction of the Deputy Commissioner, and the timber relinquished to the owners.

T. G. CLARKE, *Offg. Secretary.*

To—The Offg. Superintending Engineer, Irrigation Works.
The Commissioners of Divisions and Deputy Commissioners of Districts.

To—The Dewan of Mysore.

I beg to submit for your approval the enclosed Draft Circular regarding the removal of trees on tank bunds, when such removal is necessary for carrying out the repair or restoration of tanks.

II. Much inconvenience is at present experienced for the want of some definite rules on this subject. I put up the late Chief Commissioner's Proceedings, which do not settle the point as to whether the removal includes also the disposal of the trees. At present, the Public Works Department very often pay large sums for the removal of large stumps, as well as the trees, and the timber is then handed over to the owner for nothing. It is therefore a premium for the owners to evade the removal of the trees within the specified date.

C. H. M. KENSINGTON,
for *Secretary, P. W. D.*

23*rd August* 1888.

CIRCULAR MEMO.

The following Rules regarding the removal of trees growing on tank bunds, when necessary for carrying out repairs, and the disposal of such trees, are laid down for future guidance :—

(1) Prior to operations being commenced by the Public Works Department, the Executive Engineer should send timely intimation to the Deputy Commissioner, specifying a reasonable period within which the removal (including stumps and roots) should be effected.

(2) If the trees are not removed within the specified period by those whose claims to ownership have been admitted by the Revenue authorities, under the rules relating thereto, the Executive Engineer or other Officer of the Public Works Department superintending the work shall be at liberty to direct their removal an to dispose of the timber for what it will fetch, crediting the amount to the work.

23*rd August* 1888.

C. H. M. KENSINGTON.

To—All Executive Engineers.
All Deputy Commissioners.

DRAFT MYSORE TANK CODE.

Statement of Objects and Reasons.

Our object in preparing this draft has been to sketch out a system, practicable in itself and suitable to a Native Administration, by which the tanks of the Province may be kept in efficiency and repair.

Up to 1873, the action of Government in carrying out the repairs of tanks seems to have been governed by no definite system. What funds were available were expended on those tanks whose needs attracted most attention: naturally these were for the most part the largest tanks. Since 1873, the serial system has prevailed: but in spite of its theoretic excellence, it has to be abandoned as impracticable. To complete the Kolar District alone according to this system would cost 72 lakhs and occupy 30 years.

It is necessary to take a new departure and in doing so to confess that Government has hitherto been attempting to do too much, and must in future spend less and do less. It is necessary also to devise a system which shall be easily worked by a Native Administration and be suitable to the spirit of such an Administration. The natural conclusion is that we should revert as closely as possible to the system under which the tanks were maintained under Native Rule before the English occupation. It is generally allowed that they were maintained then with fair efficiency, and have fallen more and more into disrepair, as our Government exacted less from the raiyat and undertook a larger share of the work itself.

The old native system seems to have been that the principle of enlightened self-interest was trusted to, to induce raiyats to keep their tanks in repair, but that in the case of the largest tanks or of works requiring expensive outlay, the Pallegars or the Government of the time were in the habit of assisting them. In order to revive a system which has somewhat fallen into abeyance, it seems necessary to distribute clearly the responsibilities of the different members of the village society, and to impose penalties for the neglect of those responsibilities.

We do not think it possible or advisable for the Government to withdraw at once from all direct expenditure or concern with tanks, and there are two antagonistic theories as to the degree of responsibility which the Government should continue to bear. One is supported by two officers whose opinion carries great weight, Messrs. Krishnaiengar and Ricketts, who think that all ordinary maintenance and repairs to earth-work should be done by the raiyats to all tanks, large and small, but that all work requiring skilled labor, such as repairs to revetments, sluices, and waste-weirs, should fall on Government. They urge that the raiyat will give labor but not money, and that the attempt to make him pay the considerable sums which are occasionally required for repairs to stone-work will fail. The other theory, and the one to which we incline, is that tanks should be divided on the analogy of District and Village Roads, the most important being classed as Government tanks and entirely kept up at Government expense, while all the rest are entirely kept up by the villagers. We hold that there are many great tanks, the consequence of injury to which would be so frightful that we cannot trust to self-interest or the fear of moderate penalties to ensure their being kept in order; and that for the sake of the public safety Government ought to assume the entire control of them. In return for this, we propose that the raiyats who cultivate under them should pay a higher rate of assessment, being free from the labor tax which others pay. We recognize the weight of the argument that the cost of repairing or restoring Village Tanks may at times be too heavy for a village, and we provide for contributions being paid to them in such cases out of the Irrigation Cess, which should, as we suggest, be collected at once without waiting for the re-settlement of the revenue.

We have used certain terms in the technical sense put on them by the Committee of 1868.

Re-construction and Restoration. — Creating afresh the means of irrigation after the total destruction of a work or its abandonment for five years and upward.

Improvement and Extraordinary Repairs. — Providing increased means of irrigation.

Maintenance and Ordinary or Petty Repairs.

Keeping up to a standard once attained or preventing deterioration.

We have had before us the D. P. W. Rules of October 1873 and the Draft Rules drawn up in the General Department of the Secretariat in 1875, and have made use of both in preparing this Code.

15*th April* 1878.

C. A. ELLIOTT.
C. S. MONCRIEFF.

PRELIMINARY.

Classes of Tanks.

There are two classes of Irrigation Tanks—Government Tanks and Village Tanks. All tanks which are not specially notified as Government Tanks are classed as Village Tanks.

CHAPTER I.

GOVERNMENT TANKS.

Government Tanks—Entire charges to be borne by Government.

1. Government Tanks are those which are selected by the concurrent opinion of the Deputy Commissioner and the District Engineer, and which, after the approval of the Chief Commissioner has been obtained, are notified as Government Tanks in the Provincial Gazette. The entire cost of re-construction, improvement, and ordinary repairs of such tanks shall be borne by Provincial Funds, and the work carried out and executed by Government Officers.

Grounds on which tanks are selected as Government tanks.

2. The conditions which govern the selection of a tank to be classed as a Government Tank are the following:—

I. *The revenue value of the Tank.*—As a rule all Government Tanks should produce a revenue of Rs 1,000 or over: and never less than Rs. 500.

II. *The position of the Tank in its series in relation to those above and below it.*—It should be a tank receiving water from a large catchment basin, (not less in any case than 20 square miles, and which requires on engineering grounds to be specially strengthened as a stop tank to prevent inundations from spreading to the country below; or a tank on which the water-supply of a large town depends.

III. *The past history of the Tank.*—It should be a tank which has always been looked on as Government or Amani, which does not belong to a single village, and on which it has not been customary to expect the raiyats to execute repairs at their own cost.

IV. *The practical limit of possibility.*—The number of such tanks must not be larger than the District Officer can attend to or the Provincial Funds avail to improve and keep in repair. Two or three such tanks in one Taluk should be the outside number.

Impressment of Labor.

N. B.—The term District Officer includes:
Deputy Commissioner.
Assistant Commissioner.
District Engineer.
Assistant Engineer.
The term Taluk Officer includes:
Amildar.
Police Inspector.
Inspector of Tanks.
Shekdar.

3. In the event of any sudden danger or injury happening to any Government Tank and requiring immediate repairs, it shall be in the power of any District or Taluk Officer,* or in the absence of such, of the Patel of the village in which the bund of the tank is situate, to call on all able-bodied men in the vicinity to co-operate in laboring to avert the danger or repair the injury as the case may be: and every able-bodied person so called on shall be bound to labor himself or to provide a substitute to labor at the work required. Such labor shall be paid for out of the Public Treasury at the highest rate at which similar labor is paid in the neighbourhood.

Requisitions of Material.

4. It shall be in the power of the said official to make use of any material belonging to Government or to make a requisition upon any inhabitant of a neighbouring village for the supply of any materials, such as trees, bamboos, &c., that may be necessary for strengthening or repairing a bund, and to seize or if necessary to cut down such articles, the

same being paid for out of the Public Treasury at the highest price at which such articles are sold in the neighbourhood.

Compensation for Material.

5. If the owner is dissatisfied with the price awarded for the property thus requisitioned and taken, he may apply to the Amildar, or if the price was fixed by the Amildar, to the Deputy Commissioner or Assistant Commissioner in charge of the Sub-Division, for such compensation as he considers fair, and the order of the Officer thus applied to shall be final.

Report of cases of Impressment.

6. Every case in which labor or materials are impressed as in Sections 3 and 4 shall be reported immediately to the Deputy Commissioner, who shall submit a quarterly statement of such cases in the form appended to the Chief Commissioner for publication in the Provincial Gazette.

Report for quarter ending the— of 18—

Date.	Name and No. of Tank.	Account of the damage or injury to the tank and the steps taken to repair it.	Name of officer impressing labor or requisitioning material, and cost incurred.

CHAPTER II.

VILLAGE TANKS.

Maintenance and Repair to be done by the Raiyats.

1. All Irrigation Tanks that are not selected and notified as Government Tanks are classed as Village Tanks whether they are in villages that pay ordinary revenue to Government or quit-rent of any kind or no revenue at all. The duty of executing ordinary repairs to these tanks and of re-constructing them when injured devolves on the raiyats who inhabit the village in which the tank is situate and cultivate the land which it irrigates.

N. B.—This rule applies equally to raiyats holding Inam lands and to raiyats paying land revenue; also to raiyats holding dry land in the village, as well as to raiyats holding wet lands.

Detailed list of the duties devolving on Raiyats.

2. The duties which devolve on the raiyats in respect of the maintenance and repair of tanks include the following details :—

I. *Bunds.*—Repairing them where cracked or cut into by rain, raising them to full level where sunk, turfing them where exposed, cleaning them of weeds and prickly-pear and jungle where injurious, strengthening them where likely to fail, and executing petty repairs for the purpose of maintaining in order and keeping serviceable the revetment when it has slipped or got out of order.

II. *Sluices.*—Clearing out the deposit of silt.

III. *Supply Channels.*—Clearing and keeping them in order.

IV. *Irrigation Channels.*—Clearing out accumulation of silt and repairing the earth-work.

V. *Waste-weirs.*—Executing petty repairs with a view to keep them in order.

VI. *Breaches.*—Throwing up temporary ring-dams in front of breaches as soon as possible after the occurrence of the breach, and solidly re-constructing the breached bund when the tank is dry enough to admit of it.

Preparation of the Palpatti or Register of Shares.

3. It shall be the duty of the Patel aided by a Panchayet of the village to prepare and draw up a list showing the responsibilities of each raiyat in the village in respect of I, III and IV.

This list, of which the form is given in the margin, is called the Palpatti, and shall show the area (wet or dry) cultivated by each raiyat, with reference to which his portion of the bund or channels is allotted to him, the length in yards of the portion of the bund and channel which each raiyat is bound to keep

PALPATTI.

No.	Name of raiyat.	Extent of holding.		Length of share in bund in yards.	Length of share in supply channel in yards.	Length of share in irrigation channel.	Rateable share in cash expenditure.
		Wet.	Dry.				

in order or repair when out of order, and also the share to be borne by him in any expenditure which has to be divided rateably among the raiyats.

It shall be drawn up in duplicate and sent to the Amildar of the Taluk, with whom it shall lie for a period of 15 days, within which period any raiyat objecting to the distribution may appeal to him.

After this period has elapsed, or after any such appeal has been disposed of, the Amildar shall sign and date the two lists and file one in his office and return the other copy to be kept by the Patel. The Palpatti shall be drawn up yearly in April, any change in the area or number of holding being noted in it and the shares altered accordingly.

Appeal against the Palpatti.

4. The Amildar's decision in the case of any appeal against the Palpatti shall be final.

The share of each Raiyat to be marked on the Bund and Channel.

5. It shall be the duty of the Patel to see that stones (each stone to be not less than 2 feet in length) are placed and firmly imbedded to the depth of $1\frac{1}{4}$ feet on the top of the bund and along the sides of the channels, marking out the lengths into which they are divided according to the Palpatti and the portions for which each cultivator is responsible. The cost of placing these stones shall be borne by the raiyats, and in case any one refuses to procure and place his stone in its position, the work shall be done by the Patel and the cost recovered from the raiyat.

The Patel's duty to enforce performance by the Raiyats of their duties.

6. It shall be the duty of the Patel to see that each raiyat performs his share of the work of maintenance and repair as defined in the Palpatti, to direct him to carry out the work if he neglects it, and in case of his disbeying the injunction, to cause the work to be done by hired labor, the cost of which shall be recovered from the raiyat as an arrear of land revenue.

Duty of cleaning out Sluice.

7. It shall be the duty of the Nirganti to perform the work defined in Clause (II), and in case of his neglecting to do so, the Patel shall proceed as in the preceding section.

Repair of the waste-weir.

8. It shall be the duty of the Patel to cause the work defined in Clause (V) to be carried out by the raiyats, and in cases where skilled labor is required, to hire the same, recovering the cost from the raiyats in the proportions laid down in the Palpatti.

Procedure when repairs seem beyond the power of the Raiyats.

9. If in any case the expenditure necessary to put the revetment or the waste weir in serviceable order be so great that the Patel and raiyats are unable to meet it, the Patel shall give a petition to the Deputy Commissioner asking for help from District Funds, to carry out the work required. On receipt of such a petition the Deputy Commissioner shall make due enquiry and shall decide either that the cost is not excessive, and that the village must execute the repairs at once under pain of the penalties contained in this Code, or that the cost is so great that it would be unreasonable to expect the village to bear the whole of it, and that assistance should be given to the Patel and raiyats, either by way of contribution from the District Funds, or by way of Takavi; and that till such assistance is given, the penalties enacted for non-performance of the duties of repair shall be held in abeyance.

Impressment of labor.

10. In the case of imminent danger to the bund from inundations or of an actual breach occurring, it shall be the duty of the Patel to call on all able-bodied male residents in the village to turn out and join in executing such repairs as are requisite to save the bund, or (when a breach has occurred) such works as are contemplated in Clause (VI), and every person so called on shall be bound to contribute his own labor or that of a substitute, until the work in hand is completed.

Requisition of Material.

11. The Patel is authorized to require and to take for the purpose of saving the bund from breaching, or of repairing it when breached any property such as timber or bamboos, &c., that may be requisite, whether belonging to Government or to any private person in the village.

Compensation for Material.

12. In case the owner of any such property shall consider that an unduly large contribution has been required from him or any excessive damage has accrued to him from such requisition, he may give a petition for compensation to the Amildar of the Taluk, whose decision shall be final. If the Amildar decrees any compensation, it shall be paid out of the Treasury to the complainant and shall be recoverable from the raiyats as land revenue in the proportion laid down in the Palpatti.

13. It shall be the duty of every raiyat to abstain from doing anything that may injure the security or the utility of the Tank, such as throwing up turf-dams upon the permanent waste-weir of a tank where such action has been expressly prohibited by the Deputy Commissioner or District Engineer, introducing fresh sluices into a bund, altering the course of a channel or making a fresh channel without the sanction of the Patel or Village Panchayet, tampering with the stone-work of the revetment or waste-weir, cultivating within any strip of land in the rear of the tank or at the side of any irrigation channel, within which cultivation may have been prohibited by the Deputy Commissioner or District Engineer.

Offences causing injury to the Tank.

14. It shall be the duty of the Patel to prohibit any raiyat from committing any of the offences mentioned in the preceding section, and if he persists in such conduct to report the same immediately to the Amildar of the Taluk.

Patel's duty to prevent such offences.

15. The Deputy Commissioner of every District shall, in consultation with the District Engineer, draw up rules prescribing the times at which it shall be incumbent on the raiyats attached to each tank to carry out the several duties of maintenance and repair laid down in Section 2. Such times may be uniform for the whole District or may differ for different parts of the District, according to the circumstances of the country. These rules shall be laid before the Chief Commissioner, and if approved by him and published in the Provincial Gazette, shall have the force of law.

Time at which duty of Repair and Maintenance is to be carried out.

16. There shall be an Inspector appointed in each Taluk, whose duty it shall be to visit every Village Tank at least twice during the course of each year and to report to the Amildar on its condition and on the manner in which the Patel and raiyats perform their several duties as laid down in this Code. He will also submit monthly Progress Reports showing the number of tanks inspected and remaining to be inspected by him.

Duties of the Inspector of Tanks.

17. On receipt of a report from the Inspector of Village Tanks to the effect that in any village the Patel or raiyats have neglected any of the duties imposed on them by this Code, the Amildar will either summon such Patel or raiyats or will go to the spot and enquire into the charge, and if he considers it proved, shall proceed against him or them as laid down in the penal sections hereinafter.

Procedure of the Amildar on reports by Inspector of Tanks.

In the case of a repetition of the offence or if the Amildar considers the case urgent or believes that the punishment to be penally inflicted will not ensure the carrying out of the necessary work of maintenance and repairs, he may report to the Deputy Commissioner, who may, if he thinks fit, appoint a competent officer to go to the spot and enforce the carrying out of the work either by the raiyats or, in the case of their continued recusance, by hired labor, the cost of the officer's pay and (if labor is hired) of the pay of the hired laborers to be defrayed from the Treasury and recovered from the raiyats rateably (according to the Palpatti) as land revenue.

Procedure in case of repeated neglect.

CHAPTER III.

Penal Clauses.

1. Any person neglecting or refusing to perform the duty laid down in Chapter I, Section 3, and Chapter II, Section 10, may, on complaint being laid by the Patel of the Village or the Inspector of Village Tanks and on conviction before the Amildar of the Taluk, be sentenced to a fine not exceeding Rs. 50, or in default, to simple imprisonment not exceeding 1 month.

Penalty for evading law of Impressment.

Appeal from the Amildar's order to lie to the Sub-Division Officer or to the Deputy Commissioner.

2. Any Patel neglecting to perform the duties laid down in Chapter II, Section 3, (preparation of the Palpatti), 5, (setting up stones on the bund and channels), 6, 7, 8, (causing ordinary repairs and maintenance to be carried out, unless protected by the provisions of Section 9), 10, 11, (impressing labor or material for an emergency), 13, (prohibiting injuries), shall, on complaint being laid by the Inspector of Village Tanks or by any superior Taluk or District Officer and on conviction before the Amildar, be punishable with fine not exceeding $\frac{1}{4}$ of his annual emolu-

Penalty for neglecting duty of Patel.

ments, or Rs. 10, whichever of these sums is the largest, and in case of a repetition of the offence, with deprivation of his office An appeal will lie from the Amildar's order to the Deputy Commissioner of the District.

Penalty for commission of offences by Raiyats.

3. Any raiyat committing any of the offences laid down in Chapter II, Section 13, shall be liable, on complaint by the Patel or Inspector of Tanks and on conviction before the Amildar, to the punishment prescribed in Section of the Penal Code for the offence of mischief.

This order will be appealable to the Deputy Commissioner, whose decision shall be final.

Recovery of cost of hired labor from Raiyats.

4. If a Patel in performance of the duties entailed on him under Chapter II, Sections 5, 6, 7, 8, carries out work with hired labor, and if the raiyat refuses to pay his share of the cost of such hired labor, the Patel may complain to the Amildar, who may after enquiry re-imburse the Patel his expenditure out of the Treasury and recover the same from the raiyat as land revenue. This order will be final.

Return of Offences and Punishments under this Code.

5. Monthly returns of all cases coming under Sections 1, 3, 4 will be submitted by Amildar to Deputy Commissioner (form appended), and quarterly statements of all cases under Sections 1, 2, 3, 4 by Deputy Commissioner to Commissioner (form appended).

CHAPTER IV.

Revenue and Assessment.

Assessment of land under Government Tanks.

1. The rate of assessment of all lands irrigated by Government Tanks will be fixed at 25 per cent higher than the rate paid by similar lands having similar water advantages and irrigated by Village Tanks. (This is on account of the greater security of getting water and the freedom from responsibility for repairs and maintenance.)

Imposition of Irrigation Cess.

2. All lands irrigated by tanks, wells or channels shall pay an irrigation cess over and above the revenue fixed on the land. The rate of the cess shall be fixed from time to time by the Chief Commissioner, by Notification in the Gazette, for any District or part of a District. The Irrigation cess shall be formed into a District Fund and shall be administered by the District Local Funds Committee and applied in the manner laid down below.

First Charge on Irrigation Cess

3. The first charge on the irrigation cess shall be the ordinary repairs of the Government Tanks and the pay of the Establishment kept up for the inspection of Village Tanks

Manner of spending balance of Irrigation Cess.

4. The balance may be allotted by the District Local Funds Committee at their discretion, either to carrying on works of improvement on Government Tanks, or as contributions towards the re-construction of Village Tanks which have breached through no neglect of their duties on the part of the raiyats but through uncontrollable causes, or the improvement and restoration of such as have fallen into disrepair, as provided in Chapter II, Section 9.

Separation of Water Rate from Land Assessment.

5. It shall be an instruction to the Settlement Department to assess the revenue on each Survey No. in wet lands in two parts: the first being the revenue which the land would pay if it was dry, the second being the additional sums chargeable by Government on account of the water privileges the land enjoys.

Remission of Water Rate.

6. When a tank has breached from causes beyond the raiyats' control, or when the water supply has completely failed in consequence of drought, the part of the revenue which constitutes the water rate may be remitted and also the irrigation cess, under the orders of the Chief Commissioner.

Accounts of Water Rate to be kept separate.

7. The amount realized as water rate shall be shown separately from the amount realized as land revenue proper in the accounts of the Village, the Taluk and the District.

GOVERNMENT OF MYSORE

NOTES ON THE DRAFT MYSORE TANK CODE.

Having been requested to give my opinion on the above mentioned paper, I beg to offer the following remarks for consideration and to request that they may be read after the paragraphs of the Code to which they refer, and which I have not considered it necessary to copy :—

CHAPTER I.

Government Tanks.

Para 1 says that the entire cost of reconstruction, improvement and ordinary repairs of such tanks shall be borne by Provincial Funds. I note that in Chapter IV, para 3, it is laid down that this work is to be one of the first charges on the Irrigation Cess.

Para 2, Clause I.—The following is a statement of the tanks in the Province according to the latest returns :—

Yielding.	No. of Tanks.
Above Rs. 5,000	10
Between 4,000 and 5,000	12
" 3,000 and 4,000	8
" 2,000 and 3,000	45
" 1,000 and 2,000	167
" 500 and 1,000	548
" 100 and 500	4,944
" 50 and 100	4,341
Below 50	14,280
Yielding no revenue	13,625
Total	37,980

If the number of Government tanks therefore is to be restricted to those yielding upwards of Rs. 1,000, there will only be 242, no less than 24,113 (not including tanks yielding no revenue) having to be *entirely* maintained by the raiyats. I do not think it will be practicable to carry out this scheme at all, but under any circumstance fancy it will be found expedient to reduce the limit to say Rs. 500. This would make the number of Government tanks 790.

Clause II.—I am not sure that I understand this clause, but think it would suffice to say "such other tanks as, on engineering or other grounds, it may be necessary, should be maintained by Government." I have little doubt there will be tanks with a less revenue than Rs. 500 that it will be found necessary to maintain. Clause III, I think this clause may be omitted altogether, and No. II as amended added to No. I. Clause IV, I doubt the possibility of reducing the number of Government tanks to the extent directed in this clause, para 3. The procedure herein laid down should, I think, certainly be enforced.

I have no remarks to offer on paras 4, 5, 6.

CHAPTER II.

Village Tanks.

Para 2, Clauses I to VI.—It will, I am of opinion, be necessary to specify clearly the level, &c., to which the various parts of the tank are to be maintained, in order that, in the first place, some standard of safety may be insured, in the second, that the capacity of the tank may not be increased so as either to endanger, or rob tanks below of their supply. I am of opinion that the level of the waste-weir of every tank should be fixed with refernece to some permanent B. M. either indelibly cut in solid rock or set up in some convenient position ; and that the height of bund, its breadth and slopes, height of stone revetment, should all be laid down with reference to this, and entered in a tank book to be kept in the village. In this book I think should also be entered the duration and depth of discharges of the weirs, or still better the readings of the gauge, when there is one, and in it should be recorded the remarks of inspecting officers for the benefit of those who may come afterwards, and in order that there may be no mistake regarding the instructions passed. It

appears to me that unless some such procedure be laid down, an inspecting officer will not know whether a tank is in proper order or not. The raiyats may raise or shorten their weirs to the danger of the tanks below, or cut off the supply therefrom; constant complaints will arise which it will be very troublesome and difficult to decide. It is proposed that Government tanks should be made strong enough to stand the breaching of chains above, and this will to a certain extent (and to a certain extent only) be feasible; but even if Government tanks are safe, a raiyat must not be permitted to tamper with his tank with the probable result of carrying away the tanks and crops of a dozen villages below. It appears to me that much more detailed and specific instructions will be necessary on these matters than are laid down in the Code, or chaos will soon come again with a vengeance.

If the duties of the raiyats are to consist moreover in maintaining these works entirely, masonry works and all, these clauses do not appear to be comprehensive enough to convey that meaning.

The succeeding paras of the Code throw the duty of enforcing the codal orders on the Patels. I have no doubt they are the proper people, and I do not know who else could do it; but the point is how far they are likely to succeed. I am not now speaking from my own knowledge, but if I have not been misinformed, the remuneration these men receive is insufficient to make the posts much sought after, and in cases in which the Patels are not the most influential men in the village, their orders do not meet with much respect. As the whole success of the scheme will hinge on the manner in which these men do their duty, the above seems to me to be a point requiring very careful consideration.

Para 9.—I would recommend that some limit be fixed as a guide in cases in which it may be considered necessary to help village from District Funds, both as regards the expenditure that may be incurred, and the portion the raiyats should bear. This might be fixed in proportion to the revenue, wet and dry, derived from the village, or otherwise, and would, I think, be some safe guard against favoritism and caprice.

Para 16.—The Inspector I look upon as a most important functionary. Nothing is said regarding the class of man it is intended to appoint. It is, however, I think, evident that he should be a man having a thorough knowledge of tanks, as his recommendations should and would no doubt carry great weight; in fact it is, I consider, not only probable, but tolerably certain, that on his inspection and recommendation alone, as a rule, would expenditure be incurred, and work carried out. It does not seem to me likely that proper men could be obtained for every taluk or that if so appointed a sufficient salary could be given to secure good men. There appears to me to be no necessity to appoint a man to each taluk. The average number of tanks per Taluk in each District, including those yielding no revenue, is as follows:—

Bangalore	...	...	...	264
Kolar	...	...	...	545
Tumkur	...	...	...	261
Mysore	...	..	...	180
Hassan	...	...	...	796
Shimoga	...	...	...	934
Kadur	...	...	...	1,454
Chitaldoorg	...	...	...	225

Of the above, 36 per cent may be deducted for tanks yielding no revenue. Assuming that there are 300 working days in the year and that a man inspected only 5 tanks each day, he could get through 1,500 in a year. Where the tanks are thicker also, a larger number could easily be inspected daily. Speaking roughly then —

1	Man would suffice for	Bangalore.
2	,,	,, Kolar.
1	,,	,, Tumkur.
1	,,	,, Mysore.
3	,,	,, Hassan.
3	,,	,, Shimoga.
3	,,	,, Kadur.
1	,,	,, Chitaldroog

This would allow of much better salaries being given, even if the above numbers were doubled as perhaps they might be with advantage in the open taluks, in which case more detailed work might be expected from the men. I am of opinion that they should be quite independent of the Amildars, and report direct to Deputy Com-

missioners. I do not consider it necessary that they inspect every tank in their charge twice in the year, but those regarding which there is any doubt and question, they should inspect as often as might be necessary. I consider that the duties of these men should be confined strictly to duties of inspection, and to a certain extent of investigation. They should have nothing whatever to do with executive work. This is the system I have recommended from the first, and it is the only way in which I think any thing like proper maintenance can be secured.

CHAPTER III.

Penal Clauses.

I have nothing to say about these Penal Clauses, except that the compilers of the Code appear to be very sanguine about the work they are going to get out of the Patels.

CHAPTER IV.

Revenue and Assessment.

Para 1.—I refrain at present from offering an opinion on this para. I heartily wish we may be able to get the 25 per cent extra.

Para 2.—The Revenue Survey Department do not include the land irrigated from wells in the Atchkat of a tank, even although the wells may be immediately below a tank and manifestly supplied by it. I should like to see this altered.

Para 3.—I am doubtful if the ordinary repairs of Government tanks ought to be the first charge on the Irrigation Cess, though no doubt they are entitled to a fair share of it. I have, however, no doubt that the establishment kept up for inspection is fairly debitable thereto.

Para 4.—In this para, the balance of the Irrigation Cess is at the disposal of the District Funds Committee. In Chapter II, para 9, the Deputy Commissioner appears to have the power of allotting it. On the principle that in a multitude of councillors there is wisdom, the first appears to me the best plan.

Having thus commented on the Clauses of the Code in detail, I beg to offer the following remarks on the general question.

Under the head of "Objects and Reasons" it is stated that in spite of its theoretic excellence the serial system has to be abandoned as impracticable; I venture to suggest that this conclusion appears to have been somewhat hastily arrived at. The only reasons given for it are apparently the probable cost and time it will take to carry out. I think perhaps this matter will be better understood if I refer to the objects of the tank scheme.

The back-bone (to use a famine expression) of the tank scheme is the maintenance of tanks by the raiyats. The repair and improvement of these tanks by Government and the expenditure to be incurred thereon is only the means to an end. When the scheme was started, the united wisdom of Mysore backed by more than one Chief Commissioner, decided that before the raiyats could be made to take over these tanks for maintenance, they must be put into perfect order at the expense of Government. The scheme provided that every tank should have a standard of safety fixed for it. That it should be brought up to that standard, and afterwards handed over to the raiyats for up-keep. Neither the serial system nor the scheme are effected in any way by the parties on whom the incidence of expenditure falls. In the first place it was decided that the expenditure should be met by Government and that the up-keep should be restricted to work not requiring skilled labor. The compilers of the Code recommend the raiyats should do the work themselves, and that the up-keep should be entirely made over to them, masonry works and all. Whichever system may be decided upon, I see no reason why either the serial system or the tank scheme should be abandoned as impracticable. No one will hail with more satisfaction the fact that it has been found practicable to get the work done by the raiyats than the supporters of the scheme. I am the individual primarily responsible for the details of the scheme, and I may explain as regards the heavy expenditure that when I drew it up, my experience had been chiefly gained in Mysore. As soon as I got the thing started, I went home, and when I returned, acted for Colonel Sankey, Major Chrystie officiated for me and was very scrupulous about altering any details I had laid down. For Districts such as Mysore and Tumkur, perhaps no alteration was needed

In Kolar it was different. In places the tanks were very thick, three to the square mile, we were in hopes that large numbers of these puddles would have been abandoned. Great difficulties were made about this. The tanks generally were in famous order, and a revulsion of policy having taken place on the subject of contributions, difficulties began to be made regarding them, and a still heavier burden was thrown on the State. It became evident that some modification was requisite.

I am still of opinion that all tanks should have a standard fixed for them and be maintained strictly to that standard. I, however, think that many of the upper tanks may dispense with masonry weirs and sluices, and that by judicious selection and a somewhat heavy expenditure on tanks lower down the drainage, the devastating effects of the failure of a chain or two of the upper tanks may be arrested.

Under statement of objects and reasons, the compilers of the Code say that there are two antagonistic theories, one, that all ordinary maintenance and repairs to earth-work should be done by the raiyats to all tanks, large and small, but that all work requiring skilled labor should fall on Government; the other, that tanks should be divided, the most important being kept up entirely at Government expense, and the rest entirely by the villagers. The first theory is said to be supported by Messrs. Ricketts and Krishnaiengar; the supporters of the second are not mentioned.

The tanks to be supported by Government are those yielding Rs. 1,000 and upwards, all others by villagers. The economical advantages of such a scheme are sufficiently obvious, but I do not believe it could be carried out.

It is difficult to fix a limit. In my proposals after inspecting the works in Kolar, I proposed that we should not interfere at all with any tanks yielding less than Rs. 100, provided always that a certain standard of safety should be insisted upon and increase in capacity without permission prohibited. The conditions, however, in the two cases are not quite parallel, and if there were any chance of getting the proposals in the Code carried out which I do not believe, I should say Rs. 500 would be a better and more suitable limit than Rs. 1,000.

To sum up, I would recommend whatever may be found feasible in the above direction, that the serial system be adhered to, that information inasmuch detail as the Province may be able to afford be collected and permanently placed on record regarding very tank, that a certain standard of safety be decided upon, and that the maintenance of all tanks up to such standard be rigidly and strictly insisted upon, that no alterations of capacity by raising of weirs or otherwise (save deepening beds which is unobjectionable, provided Government do not pay for it) be permitted without sanction of the Local Administration through the Public Works Department, that no breached or abandoned tank so entered in the record be restored or repaired without similar sanction. These are the most important points that occur to me just now, but there are a host of minor details such as the means to be taken to compel Inamdars to keep their tanks up, &c., &c., that require careful consideration and give a vast amount of trouble in carrying out any scheme.

22-5-78. W. R. J.

Minute by the Chief Commissioner of Mysore.

I have had under my consideration the proposals made by the Offg. Chief Engineer, Major Moncrieff, first, for the amalgamation of the District Fund works with the Public Works Department, and secondly, for making efficient and at the same time economical rovision for the restoration and conservancy of the irrigation tanks in the Province. These proposals having been communicated for the opinions of the several Commissioners and Deputy Commissioners, the replies received from them have been reviewed by the offig. Chief Engineer in a second Note, in which he enters into further details as to the manner in which his proposals in regard to District Funds are intended to work. The scheme in regard to tanks has been further elaborated by the Famine Commissioner and the offig. Chief Engineer, who have prepared a complete Draft Code on the subject. I proceed to review these several papers.

2. As regards the proposed amalgamation, I observe that the works executed from the Provincial and District Funds, whether relating to roads, irrigation works, cutcherries, schools, jails or hospitals, are so similar in their character and are so much more local than imperial, that the present dual management of them cannot but be productive of needless expense and waste of power. There can be no question as to the expediency, nay, the necessity of bringing these works under one management and one system.

3. For the most part, the officers consulted have given a general and somewhat unqualified assent to the proposed transfer of the management of the District Fund Works to the District Engineer. The few who oppose the measure have gone more fully into the subject, and their opinions are entitled to examination and consideration.

Major Pearse apprehends a rise of rates and greater costliness of District Fund Works, or as he puts it, a smaller quantity of higher priced and better work, instead of a larger quantity of cheaper and rougher work.

Major Clarke advocates that the Public Works Department should be made a branch of the District Administration, the Engineer Officer being an Assistant to the Deputy Commissioner in carrying out all executive details with the aid of the Taluk Establishment.

Major Hill would go still further and relieve the Engineer altogether of the actual execution of works and of all accounts, making him merely a sort of Consulting Engineer subordinate to the Deputy Commissioner, and he would entrust to the Revenue Officers the execution of all works, District and Provincial.

4. I incline to the belief that the somewhat exclusive management of works by the Public Works Department heretofore has had the effect of raising rates beyond what may be secured under a system of freer competition, and this should be borne in mind in any organization that may be made. But on the other hand the cheaper work of the unlearned and unskilfully checked Revenue agency is perfunctory in its character; the money spent is apt, as observed by Captain Maltby, to go anywhere but into the works, whilst the system perpetuates an arbitrary and oppressive exaction of forced and often unpaid labor.

5. The proposal to make the District Engineer subordinate to the Deputy Commissioner is not only incompatible with that sense of professional honor naturally entertained by the Officers of the Public Works Department, but is also objectionable on the score of diminishing the independence and sense of responsibility on the part of the Engineer Officers charged with originating and administering the Public Works in the District.

6. For these reasons I concur with Major Moncrieff that the District Fund and Irrigation works as separate branches of Public Works should cease, and that the charge and control of the whole of the Public Works of a District should vest in the District Engineer as an independent officer, and should be worked and accounted for upon the system and principles of the existing Public Works Department.

7. But I am less clear as to the capacity of that Department to undertake the charge of all the works in detail, merely transferring, as occasion requires, a certain number or class of them to the Amildars. A District Engineer and an

Assistant Engineer with a few subordinates is all that can be allowed for a District, with perhaps an additional Assistant for the Cauvery and Head-quarter Districts, and it is scarcely possible that they can undertake satisfactorily the entire charge and custody of scattered works over the area of a whole District. The better arrangement in my opinion would be to make the Amildars with their present establishment of Taluk Mestris custodians of all the Public Works in their respective Taluks, under the direct orders and control of the District Engineer, the latter reserving for execution by himself or by his Overseers such works as, by reason of their magnitude or special importance, it may seem proper so to treat; and also buildings at Head-quarters' stations.

The establishment of Mestris, who will be nominated only upon certificates of qualification, might, under the control and instruction of the Engineer, be trained for better work, or gradually replaced by better material.

The arrangement would secure for works in general, without additional cost and within easy reach, an establishment possessing local knowledge and influence and known and recognized by the people. Such an establishment would be gradually trained and kept up to an approved standard of work under professional direction and control, and their operations would gradually diffuse among the people the principles and practice of good workmanship; whilst a special field for superior workmanship would be reserved in the special works which are under the direct and immediate supervision and execution of professional officers.

8. The reduction of establishment and the saving of cost under this arrangement is to be looked for, not so much in the District Fund Establishment as in that of the Public Works Department.

9. Whilst I propose practically to divest the Deputy Commissioner of some concern in the details of the execution of works by Amildars, which would be accounted for by them directly to the District Engineer, I should desire that not only the Deputy Commissioner, but also members of a properly organized District Committee, should assume the higher position of representatives of the public interest in the District, and should bring to bear not only on the Local Fund works but on all Public Works in the District, that local interest and supervision which is so much wanting in the present system. They would have a voice in all projects and estimates for works undertaken in the District which should be submitted to the Head of the Administration, accompanied by their opinion in regard to their usefulness and costliness. They might be authorized to sanction within the allotted grants works within Rs. 500, and they would decide and recommend what works should be undertaken within the year out of the Local Funds and the grant from Provincial Funds made to the District. They might call on the District Engineer to report on works, to frame estimates, and to carry out repairs, and when a system of contracts for works shall be gradually organized, they might, in conjunction with the District Engineer, consider and conclude such contracts under free competition. The District Engineer and Amildars should severally have authority to carry out repairs and urgent works within specified limits, and the Deputy Commissioner may also carry out petty repairs within small limits, and to buildings under his charge. He might also, under special arrangement and sanction, undertake the execution of any particular work when it is desirable that he should do so. But the principle should be recognized that all public works of every description by whomsoever undertaken should pass through, and be accounted for to, the District Engineer, whilst he should furnish the Deputy Commissioner and Committee with copies of progress and completion reports submitted to higher authority, and with such other information as may be necessary to keep them fully informed of the progress of works in the District. I conceive that these measures will best accord with the administrative arrangements of the Province and the requirements of future Native Rule. With a clear definition of duties there can arise no difficulty from the Amildar being to a certain extent placed under two masters, as that officer concentrating in himself the entire Taluk administration has been accustomed under past systems to receive and carry out orders from a variety of Departments.

10. The Chief Engineer should proceed at once to re-organize the Public Works Department, of the Province and to carry out such reductions as may be practicable. It will be well that he should draw up in conjunction with a Revenue Officer of experience, a revised code of rules for the working of the Department, and hereafter a manual of instructions, regarding tanks, roads, ordinary buildings, &c., for the guidance of the Amildars and Taluk Mestris, should be prepared.

11. The system of audit and account of the Public Works Department should be enquired into with the view of proposing any simplification or saving of establishment that may be feasible, having in view of what may be required hereafter simply for a Provincial Native Administration complete in itself. I direct that these preliminary steps may be taken in anticipation of the sanction of the Government of India, to whom a copy of this Minute will be forwarded.

12. Proceeding now to consider the subject of tank administration, I accept the conclusion arrived at by Mr. Elliott and Major Moncrieff that the serial system of tank restoration, owing to the enormous outlay and great length of time involved, must of necessity be abandoned. The data assumed on the subject must for a long time to come remain hypothetical. The fact is, we are not devising a new series of tanks, but merely dealing with existing tanks whose capacity has been adjusted to the irrigable area by practical knowledge, and which require for their usefulness and safety that the bunds and revetments shall be maintained in an efficient state of repair, that a liberal waste-weir and sufficient height of bund over water level be provided.

13. I agree also in the conclusion that the Government, through the Public Works, Department should undertake at its own cost, the restoration and maintenance of only a certain number of the larger tanks which are either required as "Stop Tanks" or are of special importance on engineering grounds, on account of their revenue, or as providing the water-supply of large towns; and that all other tanks classed as village tanks, whether used for irrigation or merely for the supply of drinking water, should be left to be restored and maintained by the raiyats, under a legalized system of village labor.

14. Major Moncrieff in his first memo proposed that the Government tanks should be such as yield a revenue of Rs. 100 and upwards; but in the Draft Code, since prepared, the larger limit of Rs. 1,000 or at least Rs. 500 is fixed. This limit rigidly observed might prove inconvenient whilst practically adopting the 500 limit. I should prefer to leave generally the classification to be made with reference to the circumstances of each District and of each tank. The Government tanks would then be repaired and maintained at Government cost, no labor being exacted from the raiyats for the purpose, except on occasions of sudden danger requiring immediate repairs, when of course any labor and materials required would be impressed and paid for at the highest rates prevailing. Such procedure would be limited to cases of real and pressing emergency. Several of the officers consulted appear to apprehend that the surrender to the raiyats of the village tanks, which it is expected would comprise a very large proportion of the total number, would result in the entire neglect of these tanks, loss of revenue to Government and the impoverishment of the people. But I am inclined to believe that a somewhat exaggerated idea has been formed of the extent of revenue involved in these tanks and of the repairs hitherto done to them at Government cost. Seventeen hundred of them in the Mysore District are represented as producing a revenue of only Rs. 27,000, and the number of tanks actually repaired by Government in each year is, as a matter of fact, very small: so th at the proposed measure would result in prompt attention being given to all at once in lieu of the present system of selecting a few only annually for repairs, and consigning by far the greater number to neglect. I am aware that, owing specially to the backward condition of the raiyats in the Province, there would be considerable difficulty in reviewing their interest in maintaining their tanks in repair, but the attempt must be made at some time and it had better not be delayed. I should hope that Public Officers relieved of the anxiety of distributing the small available funds among the large number of tanks requiring repair, will be better able to see that the raiyats fulfil the duties naturally devolving on them. When the system is once established, we shall have the raiyats in every village trained to do the needful repairs to their own tanks, instead of our looking to a small Government agency who can but imperfectly discharge that duty. The raiyats would be able to perform the necessary earth-work, but frequently may not have the means necessary for the outlay on revetments, sluices and waste-weir repairs. In such cases, advances of Government money may be made to them, and recovered in the course of a few years by temporary addition to their assessments. I should advocate donation of Government money in very exceptional cases only. The Draft Code provides for the tank bunds and other works being apportioned among the raiyats for maintenance, the divisions being marked off by stones. But such division I believe would not be feasible, specially in regard to tank work, and the arrangement would be attended

with great inconvenience owing to the necessity for frequent alterations according to the fluctuating extent of the raiyats' holding. I think that the repairs would much more conveniently be performed in common, the liability of each raiyat to contribute in labor or money being determined according to the acreage of irrigated land held by him at a fixed rate per acre, or at more than one rate where the benefits of irrigation derived vary in value, and, in the case of others not holding wet lands but only deriving from the tanks drinking water for themselves and cattle, at a much lower rate upon each occupied house in the village.

15. The penal clauses in the Draft Code may I think be simplified and revised with a view of fitting them into the existing criminal law.

The portion of the Draft Code, however, which seems to me to require careful re-cosideration is that which provides for the levy of an additional assessment of 25 per cent on the lands irrigated by the Government tanks. This provision would seem to be open to objection. Ordinarily the levy of a wet assessment is supposed to provide for a return on the outlay incurred in the original construction of the irrigation works, and no further liability can devolve on the raiyat except perhaps for maintaining the work in repair, a duty which has not long been strictly enforced, and which certainly ceased altogether on the recent introduction of an irrigation cess in express commutation of it.

I am aware that the ordinary wet assessment is not always an adequate return for the large original outlay in the construction of irrigation works, an outlay which has again to be incurred, where the work has been destroyed, involving reconstruction anew. In these cases, having regard to the fact that the lands which lie valueless will acquire great value on the reconstruction of the work, the raiyat may perhaps properly be called on to contribute a portion of the cost as a condition precedent of the Government again laying out a large sum. But such exceptional cases cannot justify the general levy of the additional 25 per cent in addition to the recognized wet assessment under all the Government tanks.

The present rates of wet assessment in unsurveyed Taluks are low, having regard to the great rise which has taken place in the price of food, and as a consequence in the cost of all works. The rates are especially low on the lands irrigated by the Cauvery and other river channels. The Survey Commissioner will be requested to see that his rates provide for an adequate wet assessment, not lower than what obtains in British Territory without unduly trenching on the value of property possessed by the raiyat in the land. Meanwhile in consideration of the heavy cost devolving on Government in connection with Public Works, I would sanction in unsurveyed Taluks the levy of an additional 12½ per cent (or two annas in the rupee) upon the assessment of wet lands under Government tanks and of 25 per cent (or four annas in the rupee) on the lands enjoying certain irrigation, under the Cauvery and other river channels, maintained and repaired at Government cost, exceptional cases in which the present assessment is high being exempted from this increase. This will be in addition to the irrigation cess of one anna in the rupee which may in anticipation of the survey be collected under Government irrigation tanks and channels in the unsurveyed as in the surveyed Taluks. When a proper survey assessment is introduced, the additional assessment will cease, and the irrigation cess will alone continue to be levied.

16. As regards the village tanks which are made over to the raiyats for maintenance, the Draft Code proposes to collect the irrigation cess upon them also, for the purpose of meeting the pay of the establishment kept up for the inspection of these tanks, and for contributions required towards the reconstruction of such of them as are in ruin. The pay, however, of the small inspecting establishment required, may be borne properly by Provincial Funds, and the contributions which may be necessary in rare individual cases can scarcely justify a general levy of the irrigation cess, when the cost of maintenance for which it is intended is altogether thrown upon the raiyats. I desire therefore that in the surveyed and unsurveyed Taluks the irrigation cess should cease to be collected under the village tanks made over to the raiyats for maintenance. The cost of repairs to these tanks—large or small—should be entirely borne by the raiyats, Government aid where necessary being given only in the shape of advances to be repaid by temporary addition to the assessment. Tanks now totally out of repair, or which may hereafter be breached through no neglect on the part of the raiyats, may be treated as exceptional cases, and donations of a moiety of the cost of reconstruction may be made from Provincial Funds under special sanction, or a reduction in the assessment,

permanent or temporary, may be made to enable the raiyats to reconstruct the tanks at their own cost.

17. I should desire to apply these rules to river channels as to tanks. Since writing the above, I have had the advantage of perusing opinions obtained from Colonel Pearse, Colonel Campbell, Major Hill and Mr. Ricketts, Commissioners and Deputy Commissioners in the Province, and also from Colonel Johnson, Superintending Engineer on the proposed Tank Code. Colonel Johnson's remarks appended to this Minute are entitled to great weight, from his long connection with the irrigation works in this Province. They are well considered and contain several useful suggestions.

18. All the officers consulted entertain doubts, more or less strong, in regard to the feasibility of the scheme which involves the virtual transfer to the raiyats of the responsibility of maintaining their tanks in nearly all cases. If Government tanks are to be those yielding a revenue of Rs. 1,000 and upwards, their number would be only 242, if a minimum revenue of Rs. 500 were adopted, their number would be 790 out of a total of 37,980 tanks, or taking into account only tanks yielding a revenue of Rs. 50 and upwards, out of a total of 10,075.

	No.
Tanks yielding no revenue	13,625
„ „ below Rs. 50	14,280
„ „ between „ & 100	4,341
„ „ „ 100 & 500	4,944
„ „ above Rs. 500	790
Total ...	37,980

It is argued that such a radical change would be impracticable with the present agency of ill-remunerated and inefficient Village Patels. I should not look for the conversion of the Patels into more efficient instruments by mere remuneration. But I believe that under proper supervision, guidance and control they may be found equal to a work in which they have the most direct interest, and which is within their ordinary experience. I should desire that it be clearly understood that the responsibility of the Public officers, *viz.*, the Taluk officials and Mestris under the orders of the District Engineer for the efficiency and safety of the tanks is to be in no way reduced, and that it will still be their duty to see the necessary repairs executed: only the incidence of the charge of such repairs would be transferred from the Government to the raiyats who would contribute their labor and money. The wording of the Code is apt to produce the impression that the Patels are to do everything of their own authority and accord, that the Taluk Mestris are simply to make one or two annual inspections, and that the Amildars are merely to visit with punishment cases of neglect brought to their notice. I do not, however, contemplate any change of the present system of active supervision on the part of the Taluk officials, both in respect of inspection and actual execution of repairs to village tanks. An important point, however, which would require consideration is how far the raiyats would be able to bear the cost of the restoration of the tanks, considering the admittedly neglected state into which they have been allowed to fall.

19. I incline to the opinion that under the circumstances it would be proper for the Government, in the case of all tanks very much out of repair, to contribute a moiety of the cost of restoration other than that of earth work, in the first instance; all future repairs being entirely borne by the raiyats. The remaining moiety would also be advanced by Government where absolutely necessary, and recovered by a temporary addition to the assessment of the lands under the tank. It may be provided that such addition shall ordinarily not exceed 25 per cent, and shall in no case exceed 50 per cent of the assessment, and shall not extend over a longer term than 10 years. Taking as an illustration a tank with a revenue of Rs. 500, 50 per cent for ten years would provide for an advance from Government of Rs. 2,500, and with an equal contribution from Provincial Funds, there would be available for other than earth work Rs. 5,000, an amount amply sufficient for extensive repairs, perhaps even for reconstruction. Similarly a tank yielding a revenue of Rs. 50 could obtain a maximum advance of Rs. 250, and a like amount as Government contribution, in all Rs. 500.

20. I am of opinion that all attempts to reconstruct tanks with the view of attaining the highest standard of scientific perfection should be given up, and that the Government should be content to deal with the tanks as they are found, putting them in a serviceable state, providing them with sufficient waste-weirs and height of bund and prohibiting any enlargement of capacity without sanction. For these repairs a much smaller sum than that above indicated

would probably amply suffice. The smaller tanks may perhaps require proportionately greater aid with reference to their revenue than the larger. It would be desirable to give the raiyat a voice, not necessarily of course a controlling voice, in regard to the repairs proposed, both as to their nature and their costliness.

21. I should propose to allot a moiety of the annual grant for irrigation works, say about 2,00,000 per annum, for contributions to village tanks, the remainder of such grant being devoted to Government tanks and Government river channels, together with the $12\frac{1}{2}$ per cent and 25 per cent additional assessment, and $6\frac{1}{4}$ per cent of irrigation cess, proposed to be collected under them. I feel confident that with such contributions, the raiyats doing the earth work themselves, the village tanks* could be put into an efficient state at the rate of 2,000 tanks a year, or the whole number of 10,000 tanks above Rs. 50 revenue in five years. The advance to be made towards the raiyats' share of the cost need not exceed a grant of 5 lakhs spread over three years, after which period the recoveries ought to suffice for the further advances required.

* Say average for each tank,
Government contribution... 100
Raiyats 100
for other than earth work.

These proposals, it will be seen, provide for a more certain and distinct appropriation of funds under definite rules than what is provided for in Section 9 of Chapter 2 and Sections 2, 3 and 4 of Chapter 4 of the Draft Code, and they aim at ensuring prompt simultaneous repair of the tanks generally, with a proper adjustment of costs, in lieu of the present unequal, and, it may be said, unfair system of devoting an undue share of the available public funds to a few tanks at the expense of the others which cannot, for years, expect to receive any attention.

22. Several of the officers consulted lay stress on the advantages of maintaining the traditional system of looking to the raiyats for the maintenance of earth work, the cost of skilled labor devolving on the Government. The system, though much better than altogether ignoring the raiyats' responsibilities, is necessarily imperfect. The separation of earth work from other work is inconvenient. It is much better when this can be done to throw the entire responsibility on the parties most interested.

The exemption of the raiyats under Government tanks from liability to do earth work is also objected to, but the distinctive treatment of these tanks becomes necessary on account of their special importance, and the undue costliness of the works required for them, and the exemption of the raiyats, it will be seen, is accompanied by an irrigation cess which would cease whenever Government should consider it unnecessary to keep such tanks under its own direct management.

23. Colonel Johnson considers that from 1 to 3 highly paid Inspectors of Tanks for each District would suffice, each inspecting 1,500 or more tanks in a year, their duties being confined strictly to inspection and to a certain extent to investigation, but not extending to the execution of works. I think that a less highly paid Inspector or Mestri for each Taluk for inspection and execution of tank, road and other works, a better arrangement. There may be one or two Inspectors of higher qualifications for each District for the first few years for the purpose of determining and laying down the requirements of each tank.

24. It would be necessary that the several chapters of the Draft Code should be revised and simplified with reference to the views above indicated.

25. In regard to tanks belonging to Inam villages, the Inamdars are responsible to Government for their maintenance: they may exact from their raiyats any customary contribution of labor, or substitute, where all the parties concerned desire it, the arrangements provided for village tanks. Where the Inam tanks are large and important or are required as stop tanks, special arrangements should be made for their restoration and maintenance in communication with the Inamdars.

26. To sum up briefly the arrangements proposed in respect of tanks—

(1) Village tanks will be restored and maintained by the raiyats. For restoration *in the first instance only* the Government will contribute one-half the cost of other than earth work only.

The other half of the cost, where necessary, to be advanced by Government and recovered by temporary addition to the assessment.

Tanks totally breached now or hereafter from unavoidable causes, to be specially treated under the orders of the Chief Commissioner.

Raiyats under these tanks, to pay no other additional assessment nor any irrigation cess.

(2) Government tanks will be restored and maintained entirely by Government, the raiyats being wholly exempt from labor contributions, but paying a water cess of $6\frac{1}{4}$ per cent in all taluks, and temporarily an enhanced rate of assessment ($12\frac{1}{2}$ per cent higher) in unsurveyed taluks.

These additions to be at once levied in anticipation of the survey and settlement, and appropriated towards the cost of these repairs.

The *ad interim* addition to assessment in unsurveyed taluks to be 25 per cent in the case of lands under river channels in lieu of $12\frac{1}{2}$ per cent under Government tanks.

(3) A portion of the annual irrigation grant from Provincial Funds to be appropriated for a few years as contributions to village tanks, the remainder with collection of water cess and temporary additional assessment being available for Government tanks and Government river channels.

(4) Recoverable advance required for village tanks to be provided by a separate grant once for all of five lakhs of rupees.

27. When once an adequate survey assessment is introduced, the public faith pledged by the terms of the settlement would require that the repair and maintenance of tanks by Government should involve the levy only of the irrigation cess, and of no further assessment, though it may be possible if it be found necessary and proper and be not contrary to survey guarantee to raise the rate of such irrigation cess hereafter.

13*th August* 1878.

J. D. GORDON,
Chief Commissioner.

FOOT NOTE.

A rough estimate of available funds for irrigation works will stand as follows :—

For Village Tanks.

	Rs.
Annual grant from Provincial Funds temporarily for 5 years, besides an equal contribution from raiyats	2,00,000

For Government Tanks and Government River Channels.

1. Annual grant from Provincial Funds	2,00,000
2. Permanent irrigation cess at $6\frac{1}{2}$ per cent on $11\frac{1}{2}$ lakhs. Government tank revenue and 3 lakhs river irrigation revenue—about ...	90,000
Temporary addition to assessment till survey on 3 lakhs irrigation revenue at 25 per cent	75,000
4. Do at $12\frac{1}{2}$ per cent on 4 lakhs of Government tank revenue yet unsurveyed ...	50,000
Total for Government Tanks and Channels.....	4,15,000

So that fully 4 lakhs will always be available for the Government tanks and river channels. As items 3 and 4 cease on the introduction of survey, there will become available instead the amount of the grant for the village tanks.

	Rs.
Note.—Total irrigation revenue roughly	32,60,000
Deduct rain water irrgation	6,00,000

Remainder Irrigated Revenue.

River irrigation revenue, all Government, mostly in Mysore, less in Hassan and Kadur		3,00,000	26 lakhs.
Tank revenue under survey settlement	15,00,000		
Do unsurveyed in Mysore, Hassan, Kadur and in Tumkur	8,00,000		
		23,00,000	

Note.—Half of tank revenue surveyed and unsurveyed respectively assumed roughly as revenue under Government tanks.

No. 4110—Genl. 61, dated, Bangalore, 23rd August 1878.

1. Note by the Officiating Chief Engineer, dated 14th January 1878.
2. Note by the Famine Commissioner, dated 23rd January 1878.
3. Note by the Officiating Chief Engineer, dated 6th April 1878.
4. Draft Mysore Tank Code, with statement of objects and reasons, dated 15th April 1878.
5. Note by Colonel Johnson on the Tank Code, dated 22nd May 1878.

ORDERED, that a copy of the above Minute by the Chief Commissioner be submitted to the Secretary to the Government of India, Foreign Department, for the consideration and orders of His Excellency the Viceroy and Governor-General in Council, and that copies of the marginally noted papers be forwarded therewith.

T. CLARKE,
Secretary.

No. 126 C. P.

FROM

THE SECRETARY TO THE GOVERNMENT OF INDIA.

To

THE CHIEF COMMISSIONER OF MYSORE.

Dated CAMP LAHORE, *the 5th December* 1878.

FOREIGN DEPARTMENT.
Political.

SIR,

I AM directed to acknowledge your Secretary's letter of the 29th August 1878, No. 4249-62G., forwarding a Minute on the proposals made by Major Moncrieff, Officiating Chief Engineer, Mysore—

(1) For the amalgamation of District Fund Works with the Public Works Department; and

(2) For providing for the restoration and conservation of the irrigation tanks throughout the Province.

2. In regard to the first subject, I am to say that His Excellency the Governor-General in Council quite agrees that in Mysore there need be no distinction maintained between Provincial and District works, and that all needful professional and financial supervision may be exercised over the designing, execution, and maintenance of all classes of works, by one engineering establishment, the fact that the funds which provide them appear under different heads of revenue being immaterial.

3. At the same time, it is not desirable that the authority of the Deputy Commissioner over the works in his District should be unduly diminished by this measure. His Excellency in Council gathers from various passages in your Minute that the general effect of the system which you would introduce would be to modify, and to some extent even to withdraw from the District and Divisional Officers the authority which they now possess over works of the kind usually treated as local. The point is of importance, and there may be advantage in considering precisely how it will be settled by the rules which you propose to lay down.

4. The 9th paragraph of the Minute describes the position and powers which you propose to assign to the local authorities. The Deputy Commissioner, in conjunction with the District Committee, will be regarded as responsible for giving due attention to the requirements of local interests, and will accordingly be expected to exercise a supervision over all works in the District; they will decide or recommend, in consultation with the Public Works Officer, what works should be undertaken from District Funds, and from the grant from Provincial Funds made to the District; they will have a voice in all those larger projects or estimates for works undertaken in the District, which have to be submitted to Government for approval; and they would be authorized to sanction within the allotted budget grants works up to Rs. 500, and to call on the District Engineer to report on works, siframe estimates, and carry out repairs.

5. To the District Engineer would be assigned the whole responbility of controlling the execution of works, and the expenditure upon them. He would, within the limits for the exercise of final powers of sanction assigned to the Deputy Commissioner and District Committees, act as the professional officer of those authorities. He would not be relieved from the duty of originating or suggesting projects for works of public utility, though at the same time he would attend to all requisitions or proposals put forward by the District authorities. The charge and control of all the Public Works in the District would vest in the District Engineer, as an independent officer of the Public Works Department, acting under the Chief Engineer, and the Amildars with their establishment of Taluk Mestris would be placed in charge of the Public Works in their taluks under the direct orders and control of the District Engineer. For the future all Public Works of

every description, by whomsoever undertaken, should be accounted for to the District Engineer, who would be the officer through whom financial control on Public Works expenditure would be exercised; while he should furnish the Deputy Commissioner and the District Committee with copies of reports submitted to higher authority, and with such information as may be necessary to keep them fully informed of the progress of Public Works in the District and the expenditure on them.

6. His Excellency in Council considers that you are right in laying down the rule, that except in some special cases the execution of all sanctioned works should rest entirely on the responsibility of the District Engineer, who in professional and technical questions would be subordinate only to the Head of his Department. But it is of equal importance to provide that the proper administrative authority of the Deputy Commissioner over local works within his District should not be in any way diminished, and that all new schemes or projects and all questions regarding the works to be entered in the sanctioned District budget should remain as heretofore for the decision of the District and Divisional Officers acting with their Committees.

7. The sense of what is due to local interests and local responsibility, combined with an intimate knowledge of the people and their requirements, which the District Officer has special facilities for acquiring, are the best safeguards in India as elsewhere for the application of Local Funds to the works which are really most needed, and for the prevention of extravagance in design or waste in execution. From the nature of the case local considerations cannot apply with equal force to the larger works which require professional skill and experience, and which would go up, as at present, to the Local Government for consideration and sanction; but for minor works they should never be disregarded. There can be no room to doubt that in certain classes of works, such as communications, whether constructed from District or Provincial Funds, the local knowledge of the District and Divisional Officers is of no less importance than the professional knowledge of the Engineer.

8. His Excellency the Governor General in Council apprehends that these remarks are not likely to contain anything from which you yourself would dissent. It will be, however, expedient to prevent misconstruction, that the control of the Deputy Commissioner and Commissioner over Local Funds, the power to decide how the money is to be spent, and to superintend its application, should be distinctly recognized in the final orders issued on the subject. It is essential that any system now introduced shall be of the kind best suited, so far as can be foreseen, for administration under the Government of His Highness the Maharaja; and with this view the principles of local authority and responsibility should be carefully preserved and transmitted. With these remarks I am to convey to you the general approval of the Government of India of your proposals, and to request that a draft of the orders you would issue to give effect to them may be forwarded for sanction before final issue.

9. With regard to the arrangements for restoring and keeping up the tanks, I am to say that His Excellency the Governor-General in Council accepts your conclusion that the serial system of tank restoration must be abandoned as impracticable, and the measures you have proposed for dealing with the subject are generally approved.

10. The line of division between Government and village tanks need not be drawn at any fixed yield of revenue, but the tanks may be classified according to circumstances in the manner you suggest. It will probably be found necessary to take temporarily, under skilled direction, any of the village tanks requiring repairs other than simple earthwork, though the village may give the labor, as it is doubtful whether the Patels will be able to do much without assistance.

11. At the same time it seems doubtful whether an irrigation tax of $6\frac{1}{4}$ per cent will be a sufficient contribution towards the expense of maintenance of the Government tanks from the raiyats cultivating lands irrigated by those tanks, as they are to be entirely exempt from the necessity of supplying free labor; but the point is merely noted for your consideration. In respect to village tanks, the Government of India observe that the scheme described in the Minute provides for the maintenance of a great number of tanks throughout the Province by a comprehensive system of statutory labor. From paragraphs 7 and 18 of the Minute it might be inferred that the Amildars and Taluk Mestris, who will requisition the labor and supervise the works, will be placed exclusively under the orders of the District

Engineer. But I am to say that under a statutory labor system it is essential to maintain undiminished the joint responsibility with the Engineer of the Deputy Commissioner for the proper use of these powers.

12. I am also to observe, with reference to the calculation contained in paragraph 14 of the Minute, that 1,700 tanks only yield a revenue of Rs. 27,000—that the real value of a tank to agriculture must often far exceed the amount of rates actually collected. The Government of India also consider that the system of clearly demarcating the extent of the responsibility of each raiyat for the maintenance of tank bunds and other works by "mark" stones may be worth a trial, and that the Code might retain provisions for enforcing it, though it need not be imperatively laid down.

I have the honor to be,

SIR,

Your most obedient Servant,

A. C. LYALL,

Secretary to the Government of India

Circular No. 12.

MYSORE PUBLIC WORKS DEPARTMENT,
CENTRAL OFFICE,
Bangalore, 15*th August* 1878.

MEMORANDUM.

To

All Commissioners and Deputy Commissioners, and to
Executive Engineers and Assistants in the P. W. Department.

As owing to the financial condition of the Province it has become necessary to curtail expenditure on Public Works, and as moreover it will probably be necessary with this end in view to hand over to the raiyats for repair and maintenance, the whole of the smaller tanks in the Province, the Chief Commissioner is pleased to direct that, for the present, and until some decision has been arrived at as to the principles on which tanks are to be dealt with in future, no public money whatever, whether from Provincial or Local Funds, shall be expended on the restoration, repair, or maintenance of any tanks the average revenue derived from which for the last five years is less than Rs. 100, without special sanction of the Local Administration being first obtained.

II. Under this order no notifications of sanction for tanks yielding a revenue less than Rs. 100 will be accepted, all proposals to expend money thereon being submitted with a special report for orders.

III. In case of raiyats promising to raise the revenue of the tank to Rs. 100 if it is repaired, the proposals must be accompanied by a stamped agreement or *muchalika* from them to that effect, and Amildars will be held responsible that the terms in these *muchalika* are exacted.

IV. It is to be distinctly understood that this order leaving it to the raiyats to repair and maintain such tanks as yield a less revenue than Rs. 100, confers no authority for the restoration of any old breached or abandoned tanks, or the increase in capacity of any existing tanks, without special sanction being first obtained.

V. The Chief Commissioner desires that all Revenue Officers will earnestly exert themselves to induce the raiyats to maintain these small tanks in as complete a state of safety and efficiency as possible.

C. S. MONCRIEFF, *Major*, R. E.,
Offg. Secy. to Chief Commissioner,
D. P. W.

Circular No. 13.

MYSORE PUBLIC WORKS DEPARTMENT,
CENTRAL OFFICE,
Bangalore, 27th August 1878.

MEMORANDUM.

To

All Commissioners and Deputy Commissioners, and to
Executive and Assistant Engineers in the Public Works Dept.

In continuation of the orders issued in para V of this Office Circular No. 12, dated 15th August 1878, the Chief Commissioner's attention having been drawn to the fact that the principle of making the raiyats keep their tanks in order is not yet insisted upon in several districts, and reports having been received to the effect that even those tanks that have been put in order by the Public Works Department at a very heavy outlay are being allowed to deteriorate rapidly, it is considered necessary to point out that the proper maintenance of all tanks by the raiyats is a most important part of the duty of all Taluk and district Revenue Officers, and that pending the issue of detailed rules and orders on the matter, they should insist on the enforcement of this principle to the best of their ability. Every effort should be made to put tanks in a condition to withstand with safety the floods that may be expected later in the year.

II. Officers and Subordinates of the Public Works Department should lose no opportunity of inspecting such tanks as come in their way, whether they have been restored or repaired by the Department or otherwise, reporting all matters requiring attention direct to Deputy Commissioners; and if the neglect appears to be of a very serious character, also to the Superintending Engineer's Office.

W. R. JOHNSON, LIEUT-COL.,
Temporary Chief Engineer of Mysore.

GOVERNMENT OF MYSORE

Memo by Dewan Mr. C. Rangacharlu on the Repair and Maintenance of Tanks and Channels in Mysore.

The Chief Commissioner has called upon me to submit a Memo on the above subject with special reference to letter No. 2 I. R. I., dated 28th September 1880, from Government of India.

II. With this letter was forwarded an extract from the Famine Commissioner's report upon the proposals contained, in which an early expression of the Chief Commissioner's opinion was requested.

III. Before taking into consideration the proposals and observations made in the above mentioned extract from the Famine Report, it appears expedient to explain concisely the characteristics of the works to which they refer, the object the Government had in view in putting these works in hand, and the conditions that affected the carrying out of the scheme.

IV. The object was not—as from the report would appear to have been supposed,—the restoration of the Irrigating tanks throughout the Province. Very early in the long discussion therein alluded to as preceding the commencement of the work, the confusion of ideas that prevailed on this subject was pointed out, and it was clearly stated over and over again, both by the Local Administration and the Government of India, that the object in view was the *maintenance* of these tanks by the raiyats. The prior restoration was merely a means to an end.

V. The tank system in Mysore is made up of many series of reservoirs, each consisting often of some hundreds of units, divided into chains and sub-series, the surplus of all of which has to be discharged ultimately through the bottom tank of the series called the Terminal Tank. Each unit is therefore intimately connected with other units either above or below it, which will be affected more or less by any alterations made in its capacity, discharging powers, &c., &c., while it is also liable to be affected by any alterations that may be made in them. It is therefore evident that the management of these works could not safely be left to the individual caprice of the cultivators, and that it was necessary that some standard should be fixed up to which each tank should be maintained, and further alteration prohibited. Rightly or wrongly, therefore, it was determined that prior to transferring the tanks to the raiyats for up-keep, the circumstances connected with each work should be fully enquired into, its standard fixed, the work brought up to that standard, and the tank then transferred; and this is the course that has been followed.

VI. It may be as well here to give some idea of the amount of preliminary work this scheme entailed. When it was at first set on foot, not only was there no information available as to the relative position, capacity, gathering ground, irrigable area, details of construction (such as height of bund, length of weir, &c.,) of the 30,000 tanks that had to be dealt with, but there was no record of even the number in each Hobli, Taluk or District; and in order to obtain some idea of what had to be done, we had actually to commence by having the tanks in each Taluk counted, numbered and registered. No maps were in existence from which areas of gathering grounds or irrigable areas could be computed, and the whole area had to be surveyed. I am bound to admit that had it been so arranged, much of this information might have been supplied either by a Revenue or Topographical Survey Department, and that it was an extravagant system to make three surveys of the Province to obtain information that might have been supplied by one. This, however, did not escape the observation of the Public Works Department, which is not responsible for the extra cost entailed on this account. It is necessary to allude to the extent of these preliminary operations to account for their costly nature. I pointed out that this work would have to be done before the restoration was commenced, and estimated that the establishment charges alone would be fifty per cent of the total cost of the work.

VII. I append (Appendix A) an abstract of the tanks in Mysore compiled from the Registers supplied by the Revenue Department, from which it will be seen that the total number of tanks in the Province is 37,980, of which 13,625 yield no revenue.

VIII. With these preliminary observations, I will now proceed to consider the remarks and recommendations of the Famine Commissioners.

IX. In para 68 of the report, it is stated:—"It was proposed to restore all, "even the smallest, on the theory that if the smaller tanks at the upper ends of the "valley were neglected, a sudden flood might sweep them away one after another "and so endanger the larger reservoirs situated further down." No greater mistake could have been made. So far from its having been proposed to restore all, even the smallest, it was hoped that a large number might be permanently abandoned. The prejudicial and costly system of restoring and keeping up a large number of shallow evaporating pans, with long low straggling dilapidated bunds and insecure weirs, could hardly have escaped the attention of the Irrigation Department, whose bias would naturally be in favor of deep tanks, with short bunds but great storage capacities, commanding large areas of irrigable land, and with a stable site for weirs. The loss of water by the exposure of a so much greater total surface area—the loss of land flooded by the unnecessary multiplication of these shallow ponds, which were not only next to useless in themselves, but worse still, prevented the improvement of really fine useful works above or below them,—was only too apparent, and the proposals for their abandonment led to greater contention between the Irrigation and Revenue Officers than any other subject connected with these works. That these proposals were not altogether fruitless, may be seen by the abstract (Appendix B). So-called vested rights and the tenacity with which cultivators all over the world cling to anything they can have all to themselves, apply to little bits of tanks as well as to little bits of land. It were however too strong to be overcome to any great extent by the utilitarian views, and arguments of the Irrigation Department. Again, the safety of the larger reservoirs was not the consideration that led to the repair of the small Upper Tanks. That object was much better provided for by a system of so called "Stop Tanks." The reason the small Upper Tanks were repaired was that the Revenue Officers would not consent to abandon them, and insisted on their being brought up to standard before being handed over for up-keep to the raiyats.

X. The report goes on to say that "experience has proved such a restoration as this to be quite impracticable." With reference to this, I may observe that it may be advisable to look to the raiyats to carry out a large portion of the work at their own cost, and it may take some years to make the restoration complete, but that the restoration so far as was intended may be completed in not an unreasonable time, I think there is no doubt whatever. The Commission are in error in supposing that work has only been done in two out of the eight Districts. Some of the most important series have been for some years completed in five out of the eight Districts, *viz.*, Bangalore, Chitaldroog, Hassan, Mysore and Kolar (see Appendix). They appear to have based their experience on some information procured from Kolar. The circumstances in the Kolar District were quite exceptional. Against 1,455 tanks yielding a revenue of less than Rs. 100 in Bangalore, 999 in Mysore, 704 in Tumkur and 253 in Chitaldroog, we have no less than 2,954 in Kolar, of which 2,227 yield less than Rs. 50. It is no doubt by taking all these small works into account, that the Commission have arrived at the conclusion noted in their report. But it is not necessary that all these small works should be repaired by Government, nor have we so many in other Districts. Moreover the tanks dealt with in this District were found to be in a very much more dilapidated condition than in other Districts. With the exception of a few of the larger tanks, the quantity of work that had to be done amounted nearly to re-construction. Again in the Kolar District, many of the smaller Upper Tanks were taken up that need not have been touched. Too much was no doubt attempted there, but this is a matter that can be rectified, and has been considered below. One thing is certain, the tanks should not be left in their present state, and another equally so, that the raiyats cannot do all the work unaided. The period the restoration will take to accomplish will be longer or shorter according to the system adopted and the sum expended thereon. Whatever is done should be carried out in an efficient and thoroughly systematic manner. Any improvements that can be suggested on the system already

established can of course be considered, and if approved, adopted. That there is anything impracticable about the scheme, as it stands at present, I cannot allow.

XI. It is stated that "too much has been attempted," and that this has been the case to a certain extent, especially in Kolar, I admit. It has however been lately ruled that no Government money is to be expended on tanks yielding an average revenue of less than Rs. 100. This ruling has been received with great disfavor by the Revenue Officers. The Commissioners propose that the limit should be fixed at Rupees 500. The reasons for fixing this limit have not been given, and I am unable to reconcile the proposal with another statement made by the Commissioners to the effect that "it would be unwise policy to neglect works "on which the very life of the Province depends." A reference to Appendix A will show that there are only 790 tanks in the Province with a revenue of Rs. 500 and upwards, and a total revenue of Rs. , that there are 4,944 with a revenue of between Rs. 100 and 500 yielding a total revenue of Rs. It is therefore evident that the welfare of the Province is much more dependent on tanks of this size than on those that are larger. It is as well here to mention that the amount of revenue shown as derived from a tank is that yielded from the wet land irrigated below it, and within certain limits cannot be taken as a measure of the importance of the tank to the State or to the raiyats. On the greater number of these tanks, the villages are dependent for water, and if the tanks were abandoned, the villages would be deserted, and dry lands yielding perhaps fifty times the revenue of the wet and of much more importance would also be thrown up. It appears to me idle to suppose that the raiyats will bring up to standard these large tanks, nor am I of opinion it would be advisable to allow them to attempt to do so, and I have therefore no hesitation in stating that this proposition cannot be carried out. It may be said that the same argument will also apply to tanks of less revenue than Rs. 100, of which the Registers show that there are no less than 18,621 in the Province. A reference to Appendix A will however also show that the great number of these tanks are in the Malnad. These are mere hill ponds that require no restoration, and on this account were deliberately cut out of the original scheme. Excluding Kolar in which as has been already pointed out, the number of these small tanks is excessive, there are only 3,161 in the other four Maidan Districts. The same arguments therefore do not apply to them. The limit of Rs. 100, I think, should be retained for these additional reasons. A tank under which the raiyats cannot be induced to cultivate land that will yield a revenue of Rs. 100 cannot be a tank of much importance, or that it would be worth while for Government to spend much money on. If therefore all that is necessary cannot be done by the raiyats themselves, it would be better that the tank should be abandoned. Should there be any special circumstances connected with it, they can be specially considered; but any customary attempt to break through the rules should be discouraged. Another reason is that funds are limited, and for this reason and others it is necessary to fix a limit to the work to be done. It has been proposed to reduce the limit to Rs. 50. The number of tanks yielding a revenue between Rs. 50 and 100 is 4,341, which would go a good way towards doubling the number of works to be taken up. With a reduced Department and scarcity of money, the limit of Rs. 100 appears therefore to be in every respect suitable, and should, I think, be adhered to, at all events to start with.

XII. The Commissioners further recommend that tanks with a revenue of Rs. 500 and upwards shall not only be restored but maintained ever afterwards at the expense of the State. No reasons are given for this recommendation, nor can I conceive any. If in the long discussion previously alluded to, one point more than another was agreed upon, it was that Government should be relieved of all duties in the shape of maintenance in connection with the earth-work of tanks. The impossibility of their attending to this was fully recognized. The nature of the material of which these works is composed being such as is easily acted upon by the weather—the rapid manner in which small damages develop into great, if not immediately rectified—the impossibility of such minor matters being promptly attended to by any Department of the State, owing to the great number and scattered nature of the works—the ease with which the works can be done by the raiyats themselves—and if taken in proper time, the insignificant amount of labor it will entail on their part—were and are unanswerable arguments against any Government Department having these duties thrust upon it, further than seeing that they

are actually performed. The proposal of the Commissioner could not be carried out without a very great deal of trouble and additional expense even on the 790 tanks to be dealt with. This number would represent 100 large tanks in each District to be constantly looked after (for if the maintenance were handed over to Government, the raiyats would do nothing). This not only means 100 tank bunds to look after, but some miles of supply and distribution channels to each tank likewise. To undertake any such duty would be most objectionable and is altogether unnecessary.

XIII. It is important that there should be no misunderstanding in this matter. Maintenance having been clearly defined, it should without further delay be legally enacted that all works falling thereunder are to be carried out by the raiyats themselves under certain penalties. No distinction should be made, so far as maintenance is concerned, between tanks and channels, big or little. If a tank is large, so much work in proportion to the number of cultivators will not be required to its bund; but more to its subsidiary works, such as feeding and distribution channels, &c. If less work is requisite on the very small tanks, that is one reason why it is considered that the work of bringing them up to standard should also fall upon the raiyats.

XIV. Having thus endeavoured to dispose of the points brought forward by the Famine Commissioner, I will propose in detail the measures that, in my opinion, should be adopted for dealing efficiently with these works in future.

XV. *Maintenance.*—There is not now, nor do I know that there has ever been, much difference of opinion as to the absolute necessity of the up-keep of the earth-work of tanks being performed by the raiyats themselves. No matter what amount may be spent on tank restoration by Government, the results, so far as earth-work is concerned, will assuredly disappear more or less in a few years, if this up-keep be neglected. It is admitted at all hands that this up-keep is of too great a magnitude to be performed by any Department, and that, until a few years ago, it was a duty the raiyats had to carry out themselves. There have however been differences in opinion as to the system of enforcing these duties. As stated in para 5 of this Memo, it was resolved that prior to being handed over to the raiyats for up-keep, the tanks should be brought up to standard. I was always opposed to this view, and considered that the tanks should be handed over at once. The propriety of this was afterwards recognized, but was only very partially carried out. Now that the sum available for restoration has been so greatly curtailed, the adoption of this plan has become a necessity that should be no longer delayed. One difficulty in adopting this course arose from no standard of up-keep having been fixed upon. On a tank being restored, *permanent bench marks* were put up. The height at which the bund was to be maintained was marked by stones inserted all along the bund. All details of construction, such as, width of top of bund, front and rear slopes, length of weir, &c., &c., were entered in the Tank Book; and there was no difficulty in maintaining the tank at the exact standard fixed for it except that of getting the work done. This was not the case with tanks that had not been dealt with, and I shall show how this is to be got over further on.

XVI. The difficulty of the work not being done has still to be surmounted. A large number of tanks have, at a great expenditure of money and trouble, been brought up to standard, handed over to the Revenue Department with bench-marks, tank books, &c, complete. In exceptional cases only, however, have the rules, as regards maintenance, been enforced; and as reported over and over again by Executive Engineers and in spite of repeated orders on the subject, the tanks are fast relapsing into the condition in which they were before the restoration was commenced.

XVII. The duty of maintaining the tank must rest upon the raiyats themselves, and the responsibility that it is done must rest upon the Taluk officials; but experience has proved that it is hopeless to expect that this will be carried out in anything like a complete and systematic manner without other aid and supervision. The original scheme provided for Tank Inspectors, and if it is intended that the system of maintenance should be enforced, they should be appointed at once.

XVIII. I propose that one of these men should be at once appointed to each of the Districts of Bangalore, Tumkur, Mysore and Chitaldroog, two for Kolar, and one each for Hassan, Shimoga and Kadur, until I am prepared with some more definite proposals regarding the Malnad tanks.

XIX. Their duties will be to visit the whole of the tanks in their Districts in regular order, to see that they are kept up to such standard as may be laid down; to point out to the Patels or others and enter in the Tank Book what is required to be done to each; to report result of their inspections to Amildars and Executive Engineers; to make small estimates for pretty repairs to stone work, weirs, sluices, &c., and in cases of neglect or necessity to revisit the tank to see that the orders issued have been carried out.

XX. As the time of the Inspectors will be entirely taken up in their inspection duties, they will be entirely confined thereto, and they will have nothing to do with the supervision of any actual work, with the preparation or inspection of projects or with the payment or supervision of coolies.

XXI. Their report will be made in printed forms, under a series of headings, with a column of remarks, and will be as simple and clear as it is possible to make them.

XXII. The responsibility that the tanks are properly maintained will rest of course with the Amildars and Officers under them; the Inspectors are intended to assist them by pointing out when this has not been done. They should therefore be entirely independent of the Amildar. The duties they will have to perform moreover will require an intimate acquaintance with the Irrigation Work, knowledge of levelling, &c., and their reports will contain matter necessitating attention on the part of the Public Works as well as of the Revenue Department. On all accounts therefore the man should be attached to the Public Works Department and be under the orders of the Executive Engineers. Amildars should correspond with them direct and obtain from them all the information regarding the tanks that they require.

XXIII. Good men will be wanted for the work. I therefore propose that they should draw Rs. 150 with Rs. 50 travelling allowance and have a Mutsaddi on Rs. 15 and two peons of Rs. 5 each attached and be charged to Irrigation Cess. These charges will amount to Rs. 2,700 a year for each District with one Inspector which will not, I hope, be considered an outlay worth consideration in comparison with the object to be gained. Appendix D shows the Revenue Irrigation Cess, &c., for each District calculated according to such information as I possess, with the percentage these charges will impose on the revenue realised on the tanks.

XXIV. The Inspectors will be furnished with the serial maps, and statements, Topographical and Survey Maps of their Districts, Tank Registers, &c., and it will be part of their duty to work out the general plans for series, filling registers and statements, and in other respects see that all the information regarding the tanks in their Districts is kept up as complete as possible.

XXV. Appendix E gives the works to be comprised under the head of maintenance. The only points regarding which I foresee any difficulty is the making good of small derangements of stone work whether to facing or weir; anything in the shape of general repairs or reconstruction, I am prepared to allow, should be carried out at the expense of the State. With dry stone work perhaps more than with anything else a stitch in time saves nine, and the safety of a large weir may depend upon the prompt replacement of a few stones loosened by a flood or otherwise. I think we might look to the raiyats for work to this extent. It would be ridiculous to allow a weir to be carried away for want of timely attention of this kind. I believe that ultimately the raiyats will do it readily enough. It is the start, that is the difficulty.

XXVI. *Restoration.*—The reason that the restoration of tanks has been regarded as a matter of so much importance heretofore is that maintenance has not been exacted and the works have been allowed to fall into a neglected and inefficient condition. This prevented restoration will gradually loose ts importance and make way for mere improvement works. So long as maintenance is properly carried, I do not think we need trouble ourselves about a little delay in restoration, or improvement.

XXVII. In carrying out restoration and improvement on a large scale, and with a special Department, it is necessary for various reasons to proceed in a regular manner. The establishment can be much better supervised, can do more work with less trouble and travelling, and having once done it the job is complete, and the work finished so far as that part of the District is concerned. When however the work has to be performed by a Department engaged upon other duties which necessitate the establishment being scattered all over the country, it is not possible

to proceed in the same regular and systematic manner. A selection can be made of the most urgent works, wherever they may be, and they can be put in hand one after the other, as funds will permit of their being carried out, and establishment is available for their projection and supervision.

XXVIII. But although the work cannot proceed in the same systematic manner as heretofore, there is no reason why we should fall back into the slip-shod system of olden times and deal with tanks as if they had no connection whatever with any other works in the Province; lose sight of them entirely as soon as the work is carried out; and when owing to neglect and inattention they again require restoration, make survey and levels, and collect data afresh regarding them. The advantages of serial maps and registered data regarding the works therein has been sufficiently clearly demonstrated by the work that has been done under the tank scheme, and there is no reason why the same information should not be gradually collected and put together for series that have not yet been dealt with. The Topographical and Survey maps will afford a good deal of information and allow of plans being compiled and serial registers made out and numbered. While every tank that is dealt with by the Department will supply details which should be at once bottled up so far as that tank is concerned. The collection of these data may, I am of opinion, form under the Executive Engineer an important part of the duty of the Tank Inspector, who can be usefully employed thereon, when not actually inspecting tanks, the result of his labor being recorded in Executive Engineer's office.

We have to go back to the old condition of things and determine what is the best mode of keeping up all the tanks as they are in efficient repair, leaving any improvements in individual cases to be made as the occasion and opportunity for the same offer. At the same time, to arrest the effects of breaches of minor tanks in the serial system, it is thought best to fix upon a number of large tanks as stop-tanks and place them in such condition as to stand any floods of water from breached tanks above. These should be under the immediate charge of responsible officers of the Public Works Department, who should not only do what is necessary to put them in an efficient state, but also look to their maintenance. The raiyats can be made to do their customary labor towards this, and penalties may be provided for any neglect of their duty in the matter. But they cannot understand what is necessary in these matters, and can only be instructed in the course of years. In any case therefore, there should be Government officers to see that the work is done by them.

I do not see any occasion for the separate establishment of Tank Inspectors. One or two of them in a District can do very little. Their time will be taken up in travelling, and much time will be lost in needless correspondence. It is of the greatest importance that the machinery for looking after the tanks should be in each Taluk close at hand, and I think the best arrangement is to go back to the old system of placing these tanks in the hands of the Taluk officers aided by one or two experienced Taluk Méstris, special larger stop-tanks being reserved in the direct charge of the Public Works Department officers. The Taluk Méstris will be appointed on the certificates of the Public Works Department. Their main duty will be to see that the raiyats keep up their tanks, and Taluk officers may be also allowed to spend small sums not exceeding Rs. 50 on large tanks and smaller sums on the smaller tanks in emergent repairs. But no works to the tanks at Government expense excepting the above emergent works are to be undertaken except with the sanction of the Public Works Department officer of the District or Division, and no expenditure will be admitted and passed in the accounts until passed by such officers.

The Taluk Méstris being gradually improved, will be found sufficient for the ordinary Tank and Road requirements of the Taluk, while the higher Public Works Department officers will superintend their work, both in sanctioning estimates and in passing works, and laying down instructions from time to time for their guidance such as fixing bench marks, and determining the other requirements of all the tanks gradually and reserving in their own hands the larger works only—whether tanks or roads. This arrangement will provide a permanent readily available machinery in each Taluk with all the influence and responsibility attaching to the Taluk officer, and will render it feasible to fix within moderate limits the superior establishments of Public Works officers. It is the old system and it is the one best suited to the country, at all events to a Native State.

The work to be done except in the Head Quarter Districts is of the very ordinary kind of Tank and Road Conservancy, and I attach great importance to the Taluk officers and the raiyats generally being gradually trained to it. Under this arrangement, it would ordinarily suffice to have in each District an Executive Engineer with an Overseer to carry out his orders, or to attend to matters at the Head Quarters, while the Executive Engineer is away on inspection work—and an Assistant Engineer or an Overseer for the charge of a Sub Division of the District where the District would be otherwise too large a charge, and two or three Sub-Overseers for charge of any large roads or of any important irrigation works.

The fault of the system hitherto was that the Revenue officers were left to a great extent irresponsible in regard to the works and money left to them, whilst the Public Works Department confined itself to the works placed in their direct charge. Sir James Gordon's Minute contemplated the Public Works Department taking the entire charge of all Public Works, Local Funds and General, and working through the Taluk officers, whilst the Deputy Commissioners are also to be the local controlling authorities in these matters. But such an arrangement is not likely to work without clashing, and therefore it is proposed to revert to the old system. One thing is certain, *viz.*, it will not be possible to attend promptly and efficiently to these numerous local works without the aid of the Revenue officers, and as they are the officials immediately interested and in communication with the raiyats, it is best to make them responsible for the great mass of minor works under the supervision of the professional officer.

The neglected condition of the tanks is occasioning great complaint, and I wish to see them all taken up at once comprehensively by the Revenue officers under such an arrangement as that proposed. The Rule that Government expenditure should be limited to tanks of above Rs. 100 revenue should be given up for the present at least, and grants should be made from Government towards the repair of all the tanks; those receiving preference where the raiyats undertake to pay a moiety or more of the cost themselves. We have now a better class of Amildars, and with our present Deputy Commissioners I expect good work in the matter. Tanks which have already been repaired at any considerable Government cost such as the tanks repaired under serial system, should be specially dealt with.

It is also necessary that the arrangement for Kolar and the Malnad should always be separately considered from the others which require to be at once attended promptly.

A list of the stop-tanks and large Irrigation works and roads to be specially reserved by the Public Works Department should be prepared at once.

A list should also be prepared showing all the tanks in the Province in their serial order wherever practicable with their ayakat and Revenue and with the expenditure hitherto incurred on them A similar list will be also desirable for all the other Irrigation works and also for roads.

MEMORANDUM.

As desired by the Dewan, I beg leave to submit my views on the best system for repairing tanks and executing the minor public works. I propose to consider the subject under these heads:—

A.—How to obtain the requisite funds.

B.—Who should carry out the works.

C.—What kinds of tanks should be repaired by Government.

2. *A. Funds.*—It is not necessary to dilate on the rapid decay, the result of neglect, of the innumerable tanks with which the country is studded. The evil is admitted, and suggestions are required only for an efficient remedy.

In the first place, the irrigation cess may be imposed at once in all the Taluks, surveyed or not, but the application of the proceeds should be localized as much as possible. In the manifesto which was put forward at the time the cess was imposed, it was stated that the cess paid for each tank would be spent on itself. This of course was not done. We ought at least to spend the irrigation cess of each Taluk on its own tanks.

3. Secondly, in view of the impossibility of Government meeting the enormous outlay indispensable for restoring to anything like order the hundreds of tanks which are in ruins or on the high road thereto, and in commutation of the undoubted liability of the raiyats to contribute their customary labor for the up-keep of their respective tanks, I would propose that whenever a tank is required to be repaired, the raiyats should be called upon to contribute $\frac{1}{4}$ or $\frac{1}{3}$ of the amount of estimate *for earthwork.* The contribution should be compulsory on them, and the proportion within the above limits should be determined by the Deputy Commissioner, with reference to the importance and urgency of the work, the prosperity of the raiyats holding land thereunder, the total cost required, &c. This exaction is in my opinion different from compulsory gratuitous labor, which has been condemned as an objectionable trait of ancient native rule, and the tenors of which the Mysore raiyats have learnt to forget. The desire for the speedy restoration of tanks is so great that I expect that in most cases the required contributions will be volunteered by the raiyats; but I fear any addition to the raiyat's quota above proposed might prove the last straw for the camel's back. When the new cess and the raiyat's contribution are inadequate for the repair of any tank, I think the Government should find the difference for the security of its own interests.

4. *B. Agency.*—I must premise my remarks under this head by emphatically disclaiming the slightest desire for personal aggrandizement. I held the same views before I was transferred to the Revenue Department, and my subsequent experience has fortified them.

5. The District Officer as the local representative of Government is naturally and rightly looked up to by the people for the redress of wrongs and the supply of wants; and his interest certainly extends beyond the clearing off from day to day of departmental work. Few wants are more pressing than the prompt execution of necessary public works. Through his subordinates permeating all parts of the country, the District Officer is able to control the works far more than any other departmental officer, and the strengthening of his hands in the just exercise of his authority cannot but redound to the public good. The people have very often expressed to me their opinion that the present inability of the District Officer to carry out at once desirable works is a lamentable weakness. When the raiyats clamour for the speedy repair of their damaged tank, or the Amildar reports that a Police Station or other petty building is dangerously out of order, the Deputy Commissioner has now to write to the Executive Engineer, who sends at his own convenience an order to his subordinate officer, and by

the time the latter is able to attend to the matter, after it has passed several times through the circumlocutory process, the damage to the work is increased, and the loss to the raiyats and necessarily to Government, becomes incalculably greater.

6. I think therefore that either the Executive Engineer or a professional Assistant should be placed under the Deputy Commissioner, and should carry out under his sanction all requisite works through the Amildars. By this means, a professional officer will be devoted almost entirely to the amelioration of the condition of the tanks, the importance of which cannot be overrated, whilst the Executive Engineer can attend more effectually to large buildings, roads, &c., requiring scientific skill. The Amildars too will not have two masters to serve, and being held responsible for the efficient and prompt carrying out of works, they will not be perfunctory, and things are sure to go on harmoniously. This will not moreover be quite a new departure, as it will be consistent with the avowed principles of indigenous rule to revert to whatever was practically beneficial in the pre-Public Works Department period, and departmental and professional influences need not be allowed in this Native State to mar the general good. I am free to confess that the Deputy Commissioner cannot usually be a scientific Engineer, and it may be said that harmony will not be secured by his interference with his Engineering Assistant. But all professional details can be dealt with by the latter; while his subordination in the execution of tank repairs and petty works to the District Officer will avoid the inconveniences to the Taluk officials of a duality of masters, and the moral effects of his Department being identical with the revenue will simply be invaluable.

7. If however this plan does not recommend itself to H. Hs.' Government, there is only one alternative feasible. All works should be requisitioned for by the Deputy Commissioner, and the Executive Engineer should carry them out through the Amildars, except such as can be executed only by his own scientific subordinates. The Deputy Commissioner should have power to sanction estimates up to Rs. 500 and each Amildar should have under his orders a Mestri, whose appointment may be left to the Deputy Commissioner or Executive Engineer, whichever may be considered most desirable. The Amildar should further have power to carry out on his own responsibility, emergent works up to Rs. 50, subject to the Deputy Commissioner's sanction. The work performed should of course be tested and passed by the Executive Engineer or his delegate. The Deputy Commissioner should give sanctions within his allotment, but the accounts should be passed by the Executive Engineer, on whose cheques the money is to be disbursed. Contracts should be given only to the village headmen or influential raiyats, as their self-interest may be trusted for rendering the work solid and sound. Outsiders of approved respectability should be admitted only on the villagers refusing the contracts.

9. The key for the success of the alternative method is to give the Amildar a Mestri without whom it will be impossible for him to bear the extra burden. It will also be necessary to pay the Amildar a daily batta or a monthly allowance to cover travelling expenses. For his duties have greatly increased since the revision of the Police, and with the executive of public works added thereto, and without batta, he cannot move about his Taluk and discharge his functions with that vigour and despatch, the expectation of which can alone justify the concentration of so many responsibilities on his head. If no batta is paid, some color of justification will I fear be given to the Amildar for exacting from the raiyats unpaid and compulsory labor, provisions, &c., in the course of his constant peregrinations in his Taluk on Police, Public Works and other duties.

10. Whatever system is appointed, it is highly necessary clearly to define the functions and relations of the Revenue and Public Works Departments.

11. C. *What tanks should be repaired by Government.*—I would under this head sweep away the present distinction between tanks yielding under Rs. 100 and those realizing more. The majority of tanks in the country, although directly yielding a small revenue, are by no means unimportant. They are like oases, and greatly contribute to the material prosperity of the country and the fertility of the localities in which they are situated. Wells in which water used to be near the surface when the village tank was in good order have dried up since it fell into disrepair, and the raiyats holding land thereunder cling to and

pay for it, in the vain hope of its speedy restoration. I would then take up, on the principles sketched in paras 3 and 4, and irrespective of the revenue involved, such tanks as require to be repaired, in the order of urgency, of which the Deputy Commissioner should be the judge, advised when necessary by the Executive Engineer. The abandonment of small tanks and the conservation of only large reservoirs at considerable intervals will not materially benefit the country; on the contrary, the problematic advantage from a financial point of view of having at long intervals only large tanks will be more than counterbalanced by large tracts of once profitable and smiling wet land falling into waste, and probably, also drying up the sap in the ground. Raiyats will be easily forthcoming to cultivate wet lands near their villages, but cannot be benefited by possible large additions to the irrigable areas of distant tanks, while they have their dry cultivation and other persuits to attend to nearer home.

12. In the case of tanks, the revenues from which cannot recoupthe cost of their repair in a given period, say ten years, I would revive the ruling of Mr. Bowring, and grant such tanks to be repaired by private enterprize, with the deduction for a fixed period of $\frac{1}{4}$ from the assessment of the atchkat. Since Mr. Bowring's order was passed, and before it was recalled, a great many tanks were repaired by private individuals at an outlay, which the Government could never have in all probability afforded to make on them. Instead of being unprofitable ruins, these restored tanks water large patches of smiling crops, and without additional cost not only bring in revenue directly to Government, but have contributed to the fertility and prosperity of the villages concerned. Broad principles of policy strongly recommend the revival of this system.

13. In the above outline, I have purposely avoided crowding in details and statistics; but they could be furnished if required. I hear Mr. Krishnaiengar has already submitted considerable statistics for the Kolar District on many of the points alluded to.

V. N. NARASIMMAIENGAR.

BOWRINGPET,
26th April 1881.

Proceedings of the Dewan of Mysore.

READ:—

Docket No. 490 of the 30th January 1882, from the Deputy Commissioner of Mysore, forwarding copies of reports on the inspection of the channels in the Periyapatam and Yedatora Taluke by Mr. Shunmugavelu Pille, Assistant Commissioner.

No. 466-7—21, DATED BANGALORE, 21ST APRIL 1882.

ORDER THEREON.—It is unnecessary to pass any orders on the above at this late date. Pending the re-organization of Public Works arrangements, the Deputy Commissioner should direct the Amildars to go about and see that water is regularly supplied to the fields under all the channels and to bring to notice any irregularities in the matter. They should also get the raiyats to clear the weeds and also sand in the channels under the direction of the Public Works Overseers in charge.

T. SRINIVASIENGAR,
for *Secretary*.

To—The Deputy Commissioner, Mysore District.
The Secretary in the Public Works Department.

READ:—

Memo dated 4th March 1883, from the Secretary, Public Works Department, soliciting sanction for the formal withdrawal of the order No. 466-7—21, dated 21st April 1882, directing that raiyats should be made to remove silt and weeds from all *river channels*, pending the issue of the rules regarding the maintenance of irrigation works.

CAMP No.117—27, DATED MYSORE, 6TH APRIL 1885.

ORDER.—The existing orders direct that raiyats should be compelled to remove silt from irrigation channels. The orders are considered by some of the Revenue Officers as unduly pressing upon the raiyats, who have on more than one occasion complained against them. The Dewan, after careful consideration of the subject, is of the opinion that relief is justly demanded, and directs that the orders be at once withdrawn.

2. Deputy Commissioners and Sub-Division Officers will issue circulars to their Amildars and Deputy Amildars I informing them of the Government decision, and remit *unrecovered* contributions promised by raiyats for removing the silt.

3. It will be noted that the raiyat's duty of periodically removing the weeds from the channel beds is still recognized, and Amildars and Deputy Amildars will see that the duty is not evaded.

C. RAGHAVACHARLU,
for *Secretary*.

To—The Deputy Commissioners of Districts.
The Sub-Division Officers.
The Secretary, Public Works Department.
The Comptroller.

READ—

Petition dated 20th September 1884, from Venkoba Rao at Gargesvari in the Tirumakudlu-Narsipur Taluk.

Letter No. 790, dated 30th January 1885, from the Deputy Commissioner, Mysore District, reporting on the above.

No. 326-34—9, DATED 17TH APRIL 1885.

ORDER THEREON.—The liability of raiyats for removing weeds from the channel beds is still in force ; but the order requiring raiyats to remove sand and silt has since been withdrawn.

2. When a pattadar dies, the patta should invariably be transferred to the name of his nearest heir. Pattas in the names of pattadars who have absconded or who have long since died, should be transferred to the names of purchasers or other owners in actual possession, subject to revision at the discretion of Government and upon complaint of the pattadars said to have absconded or the heirs of pattadars who have died. In every other case, the Revenue authorities should transfer pattas only upon the application of the pattadar or in favor of a purchaser at a public sale.

3. As regards the restrictions on the removal or sale of unreserved trees in occupied fields, the Deputy Commissioner will be required to submit a copy of the Ashtagram Commissioner's order of March 1878 under which such restrictions are said to be enforced.

R. VIJAYINDRA RAO,
Secretary.

To—The Deputy Commissioner, Mysore District.
Paras 1 and 2 to all other Deputy Commissioners and Sub-Division Officers.

MEMO.

To the Dewan of Mysore for orders.

The work of turfing the slopes of Irrigation works is, in accordance with long established custom, generally carried out by the raiyats. The orders on the subject issued in 1873 are enclosed. The Sub-Divisional Officer at Hassan refers a case in which the raiyats have refused to do the turf work of a tank, and states his inability to compel the raiyats to carry out the work.

As turfing is essentially a work connected with maintenance and protection from damage, it is considered that the raiyats, who have always been held to be responsible for the maintenance of works such as those referred to, should carry it out.

As the rules which at present exist on the subject are considered by some officers to be not sufficiently definite, the accompanying draft order has been prepared for approval.

Turfing is a work which can be done much better by the raiyats interested in the safety of a work than by contractors.

The work which a single individual will have to do will generally be small.

19*th January* 1886.

F. J. McLAUGHLIN,
Asst. Secy. to the Government of Mysore, P. W. D.

Enclosures.

No. $\frac{1028}{111}$

SUB-DIVISION OFFICE, HASSAN,
Dated 15*th December* 1885.

To

The Secretary to the Government of Mysore, P. W. D.

SIR,

I have the honor to submit herewith copy of the marginally noted docket regarding the cost of turfing the bund of the Salagame tank in the Hassan Taluk.

Asst. Engineer's docket No. 402, dated 20th November 1885.

2. The Assistant Engineer desired me to order the Amildar of Hassan to get the turfing to the bund of the Salagame tank executed by the raiyats. The raiyats refused to execute the work. The Assistant Engineer was informed of this, with a request to be furnished with any authority for compelling the raiyats to do such turfing.

3. The Assistant Engineer now refers me to paras 4 and 6 of the late Chief Commissioner's Notification No. 65 of the 2nd October 1873, regarding the maintenance of tanks.

4. It seems to me that this Notification refers only to such tanks as have been "brought up to standard" and formally handed over to the raiyats for up-keep. The tank in question is not one of that class.

5. Under these circumstances, I solicit instructions whether the cost incurred by the P. W. D. for the turfing of the bund of the Salagame tank should be recovered from the raiyats as a revenue demand.

I have, &c.,

T. ANANDA ROW,
Sub-Division Officer, Hassan.

From

The Assistant Engineer, Hassan Range.

To

The Civil Sub-Divisional Officer, Hassan.

No. 402. *Dated* 20*th November* 1885.

Sub-Divisional Officer's No. 434—51, dated 30th July last, enquiring for the authority under which the raiyats are to be asked to do the turfing to the Sálagame tank, Hassan Taluk.

In returning the enclosures that accompanied the above, has the honor to refer the Sub-Divisional Officer to rules 4 and 6 of Notification No. 65, dated 2nd October 1873, (published in the Mysore Gazette, dated 11th October 1873, page 180) by the Chief Commissioner of Mysore in the Public Works Department.

2. In the present case as the raiyats have refused to do the turfing, the same has been ordered to be done by this Department. The cost of the same will be duly intimated for recovery from the defaulters as a revenue demand as laid down in the rules above referred to.

D. RUNGA ROW,
Assistant Engineer, Hassan Range.

Draft Circular.

Turf-work to Tanks.

In accordance with long established custom, the turfing of the slopes of tank embankments is generally carried out by the raiyats.

A case has recently been reported in which the raiyats refused to carry out the turfing of the bund of a tank, and the Revenue Officer stated his inability to compel the raiyats to do the work.

The following order is therefore published with reference to Notification dated 2nd October 1873, on the subject of the Maintenance of Tanks.

Rule 4 is republished as follows:—

"The works falling under the head of Tank Maintenance will be ordinary earth and turf work repairs of every description connected with the tanks and their subsidiary works, excepting such as may be specially exempted and noted.....as to be kept in repair by Government."

With reference to this rule it is hereby ordered that when the earthwork is carried out by Government agency, the raiyats shall not be relieved of the duty of executing the turfing.

A tank repaired under the supervision of Officers of Government and brought up to standard shall be considered to have been so brought up to standard when the earthwork and other items noted in the design and estimate have been completed and before the turfing has been done. As soon as possible after the completion of the earthwork or a section of it, the officer in charge of the work shall give the necessary intimation to the Revenue Officer, who will then cause the turfing to be carried out by the raiyats in accordance with Rule 3 republished below.

Rule 6 which provides for dealing with cases of default is also republished.

Rule 3. "The proportion of the work to be done by each individual will be ecided by the Patel and Shekdar, according to the amount paid by each to Govern-

ment for lands, houses or other property, &c., attached to the village, such proportion to be constant, no matter what quantity of work has to be carried out. Dissentients to have the ordinary right of appeal to higher authority. The proportion of work to be done by Inamdars will be fixed in the same manner, their lands, &c., being valued at the same rates as those paid by similar property belonging to Sarkar raiyats."

Rule 6. "In case of default by any individual in the execution of his obligations as above laid down, the village authorities above mentioned are empowered and required to carry out the portion of work that ought to have been done by the defaulter, by paid labour, the cost being recovered from the defaulter as a revenue demand."

Dewan's Orders, dated 25th September 1886., *on the Asstt. Secys'. Memo of 19th January* 1886.

The Rules of 2nd October 1873 do not admittedly apply to the present case, and the turfing must accordingly be done by Government. Turfing to a bund newly repaired comes under "Repairs" and not "Maintenance." The divergence of practice as regards turfing occurs in this way. Raiyats often promise contributions towards "Repairs." Such contribution is not unfrequently in labor and includes turfing. When they agree to do this, they must be bound by the agreement. Their liability would thus arise under contract and not under law. There would be no objection to demanding an agreement to do some work of this kind as a condition precedent to Government undertaking a particular "Repair," work, but to go further and lay it down as a rule that Raiyats should turf new works is, in my opinion, inexpedient at present. What we should look to is the strict enforcement of the Rules of 1873. Revenue Officers have almost forgotten them, and they should be republished and strict adherence to them enjoined.

K. SHESHADRI IYER,
Dewan of Mysore.

Mysore,
25*th September* 1886.

D. P. W. Secretary's Note, dated 21*st August* 1886.

With reference to the accompanying note from Mr. Bayly regarding the removal of weeds from our river channels, I shall feel much obliged by your letting me have the previous papers on the subject, forwarded to you on the 12th December, as I wish to go into the subject from the commencement.

The hands of the Deputy Commissioner should certainly be strengthened so that he may have some power over recalcitrant raiyats who *will not* do their portion of the work, but I have little doubt that Mr. Bayly's view is correct and that some of the Amildars take little interest in Irrigation works and allow the raiyats to evade their duty. Very recently, when on the Virzanadi channel, I observed that the weeds had not been touched at all, and this within a few miles of the Amildar's Head Quarters.

21*st August* 1886.

C. BOWEN, MAJOR, *R. E.*,
Secy. to the Govt. of Mysore. P. W. D.

P. S.—Draft Rules on the subject of channels appear to have been drawn up in 1884 by a Special Committee, but there is in this office no record of the Committee's proceedings. Might I ask for any orders that may have passed in connection with that Committee?

C. BOWEN, MAJOR, *R. E.*,
Secy. to the Govt. of Mysore, P. W. D.

MEMORANDUM.

D. P. W. Secretary's Note, dated 21*st August* 1886.

The works required to irrigation works may be classed as—

(*a*) Repairs and Improvement.

(*b*) Maintenance.

(*a*) *Repairs, &c.* The Raiyats' liability to do this has been commuted to an Irrigation Cess. All Repairs, &c., must therefore be done by Government.

(*b*) *Maintenance.* The general rule is that this must be done by the Raiyats, that if the Raiyats fail to do it, the Revenue authorities must do it and recover the cost from the defaulting Raiyats. An exception to this rule must be recognized in the case of certain *River Channels* which are *at present* maintained by the Government except as regards removal of weeds. In express commutation of the Raiyats' liability to maintain these *River Channels*, a special rate of *eight* annas per khandi (2 acres) is levied in the Mysore and Hassan Districts. This special levy must be held to exempt the Raiyats from liability to maintain River Channels, except to the extent of removing weeds. See table below :—

- Works.
  - (*a*) Repairs and Improvements (Government must do in return for Irrigation Cess of one anna in rupee of assessment).
  - (*b*) Maintence
    - (*c*) Of special River Channels.
      - (*d*) Removal of weeds (raiyats must do).
      - (*e*) Other works such as removal of silt, &c. (Government must do in return for the special levy of eight annas per khandi).
    - (*f*) Of Irrigation works other than specified River Channels (the raiyats must do).

The above shows how the law at present stands. Revenue officers must invariably enforce the Raiyats' liability under (*d*) and (*f*) above, where necessary, recovering the cost from defaulting Raiyats.

As regards the special levy of eight annas per khandi intended for the work specified in (*e*) above, I shall put myself in communication with the Survey Superintendent as to the best means of levying it. The channels concerned are important and their maintenance should not be left entirely in the hands of the Raiyats. It is far better for Government to maintain them and recoup itself by a special levy as heretofore. I find that the annual cost seldom exceeds Rs. 40,000 for *maintenance* properly so called. At the present rate of eight annas per khandi, we require 160,000 acres under the River Channel to give this sum.

K. SHESHADRI IYER,
Dewan.

MYSORE,
14*th September* 1886.

MYSORE PUBLIC WORKS DEPARTMENT CENTRAL OFFICE,
Dated, Bangalore, 16th September 1886.

No. 4209.

From

The Superintending Engineer of Mysore.

To

The Executive Engineer, Kolar Division.

SIR,

In acknowledging receipt of your No. 378 of 31st August and its enclosures, I have the honor to state that I entirely disagree in the opinions therein expressed to the effect that our ordinary Irrigation works should not be proceeded with in the Kolar Taluk, at the same time as the repairs to be undertaken by the raiyats themselves. Judging generally from the normal rate of progress on our tank works, the raiyats do not flock to them to obtain wages, and to raise the objection that the larger tanks on contract and the smaller ones by the agency of the villagers cannot be pushed on simultaneously seems to me to point to the Amildar not wishing to exert himself in the matter, or to his not having grasped the importance which Government attach to the success of the scheme.

II. I shall feel obliged by your placing yourself in early personal communication with the Deputy Commissioner on this subject, in view to establishing co-operation and arranging that a departmental tank work need not be inaugurated in *close* proximity to an incomplete revenue tank work, so as to avoid any clashing between paid and statute labor being made hereafter the excuse for a failure in this tentative scheme to which the Dewan attaches the utmost importance and which he hopes all officers will do their best to make a success.

III. I may add that objections on the same score have not been represented in other districts in which the scheme has been started and in which similar circumstances obtain.

I have, &c.,
C. BOWEN, LT.-COL., R. E.,
Superintending Engineer of Mysore.

No. 1936. / 393.

MYSORE PUBLIC WORKS DEPARTMENT,

CENTRAL OFFICE,

Camp Ootacamund, 13th May 1887.

From

LIEUT.-COL. C. BOWEN, R. E.,

Secretary to the Govt. of Mysore, D. P. W.

To

The Deputy Commissioner, Kadur District.

SIR,

In acknowledging the receipt of your letter No. 178—1 of 28th ultimo, reporting on the results of the tentative scheme of tank repairs by raiyats introduced last year, I am to express the Dewan's regret that the efforts of the Amildar of Kadur have so far met with but scant success.

2. That there would be more or less factious opposition to the enforcement of a "mamul" which had long been allowed to fall into disuse, was to be expected; but it was hoped that judicious persuasion and the influence which an Amildar can bring to bear throughout his Taluk would soon induce the raiyats to come forward and assist willingly in the re-establishment of an old custom which is as much to their own direct interests as to the interests of Government.

3. It was perhaps unfortunate that the Amildar should at the outset have selected for trial a tank on which the work to be done was comparatively heavy, but on the other hand, it may be said that work once successfully carried out by the raiyats to such a tank would stand as an example to other villages of what can and *must* be done, and would impress upon the people that Government are in earnest in their endeavour to enforce once again what is but an old "unwritten law"—a law which, once the first strain of labor over, will not, if fairly obeyed, press with undue heaviness on the raiyats concerned.

4. That the tanks in your District have been neglected for years, as noticed by the Assistant Commissioner and yourself, is but too apparent from the fact that a tank yeilding a revenue of Rs. 300 or less should require earthwork and turfing to the value of Rs. 2,000 to bring it up to a reasonable condition of safety. But, whilst it may be admitted that from various causes, irrigation in the Kadur District has not in recent years received its fair share of attention from the Administration, this distinctly goes to show that the present generation of raiyats have egregiously evaded the formerly recognized duty of maintenance which their forefathers must have faithfully performed for centuries. You say that now the villagers do, without much grumbling, the keeping in order of the bunds, recognizing the same as their own duty; but this, it would appear from the lamentably impaired condition of the tanks and channels, is exactly what they do not do, or at all events have not done for many years past, and it is to the enforcement of their duty in this respect that the Dewan hopes that earnest attention will be given in future by all Revenue and Public Works Officers.

5. The natural consequence of the neglect of years has been that, now that effective periodical maintenance up to a defined standard is to be insisted on, there must in the first instance fall upon the raiyats a considerable amount of earthwork that would not have been required had they but carried out year by year continuously a very moderate amount of such work. It is therefore not inequitable

that they should now be called on to make good the same, and the mere fact that Government are restoring or improving the larger tanks, on which more important interests and larger revenue depend, is no argument against the raiyats fulfilling their hitherto neglected obligations in regard to the small ones. Such improvements once carried ont, the rigid *maintenance* by the raiyats of these larger tanks too is to be stringently enforced, and in the case of the smaller ones, it must not be forgotten that Government are quite prepared to execute all the stonework and masonry necessary—it is only the earthwork and turfing that they look to the raiyats to perform. Any tank once brought up to standard is to be periodically repaired by the raiyats themselves, and this obligation cannot too strongly be impressed on all concerned.

6. With advertence to the suggestion that the hands of the Executive be strengthened by laying down a rule making it lawful to employ hired labor to do the work of a refractory raiyat and to recover the cost of the same, a Deputy Commissioner is empowered so to act in the case of factious opposition. It is, however, necessary to add that this course is only to be resorted to when milder measures have failed.

7. In conclusion, I am to say that, now that work has been started and is in progress on some few tanks, it is hoped that opposition will ere long fall through, and that it will become feasible to gradually extend this system to other Taluks and bigger tanks, an aim which the Dewan trusts you will direct the Amildar to keep steadily in view. I may add, for your information, that objections, opposition and prejudices similar to those you allude to have also been encountered in other Districts by the Amildars charged with the introduction of this scheme. These, however, are by degrees diminishing, and it is hoped that they will before long entirely disappear, when the raiyats come to realize that it is mainly for their own benefit that this work is demanded from them, Government not being in a position, financially or physically, to perform it unaided.

I have the honor to be,

Sir,

Your most obedient servant,

C. BOWEN, LIEUT.-COL., R. E.,

Secretary to the Government of Mysore, D. P. W.

CIRCULAR.

From

The Secretary to the Government of Mysore, D. P. W.

To

All Deputy Commissioners of Mysore.

Dated Bangalore, 7th June 1887.

CIRCULAR No. 55.

SIR,

I have the honor to invite your attention to Notification No. 65, dated 2nd October 1873, by the late Chief Commissioner of Mysore, publishing certain rules regarding the maintenance of irrigation works handed over to the raiyats for up-keep; and to inform you that *all* tanks brought up to standard since the issue of the Notification, and on which grade stones have been fixed, fall within the scope of the order.

I have, &c.,

C. BOWEN, LT.-COL., R.E.

Secretary to the Govt. of Mysore, P. W. D.

Extract from the Address of the Dewan of Mysore to the Representative Assembly at Mysore, on Friday the 30th September 1887.

Tank Maintenance.—I informed you last year that the tentative scheme for labor contributions from raiyats for the earthwork of all tanks yielding a revenue up to Rs. 300, had been introduced into eight selected Taluks. You will be anxious to hear what measure of success has attended this attempt to re-establish a custom which, though formerly well recognized, has unfortunately been allowed to fall into disuse in recent years. At the outset, there was, as indeed was anticipated, some opposition to the scheme in a few instances. But when it became known that the Government were in earnest and meant at once to do their part of the work, and only expected the raiyats to do what legitimately was their share, the people readily recognized their obligations, and all opposition speedily disappeared. In the Nelamangala, Sira, Challakere, Mandya and Shimoga Taluks, the scheme has been so far fairly successful, but in Arsikere, Kolar and Kadur Taluks, the efforts of the Revenue officials have, till recently, proved abortive from various causes, chiefly, the want of perseverance and tact on the part of the Amildars of those Taluks. On the whole, however, a fair measure of success has been achieved, and an extension of the scheme to other Taluks is now being effected. This necessitates our giving to the Amildar of every Taluk a competent subordinate to help him in giving proper effect to the scheme, as each tank to be restored, however small, involves a certain amount of estimating, measuring and execution of masonry work, which the Amildars and the ordinary revenue staff are unable, without additional aid, properly to attend to. It is accordingly deemed necessary to give to each Taluk a Tank Overseer, to promote tank restorations, and at the same time, to enforce the maintenance of all tanks. Trained Overseers are however not ready to hand, but the gradual disbandment of the Revenue Survey establishment offers the opportunity for training for these duties the best of the late Revenue Survey Measurers and drafting them gradually into our Shekdar service, which, I need scarcely remind you, remains to be placed on a sound and efficient footing.

The Government are thus giving full effect to the scheme as regards minor tanks with a revenue up to Rs 300, but at the same time they feel also convinced that the revival of this ancient custom, may, with great benefit to the raiyat, be extended to *all* tanks in the Province. Indeed, so far as the principle is concerned, there is no difference between tanks with a revenue of Rs. 300 and tanks above that limit. But, owing to the magnitude of the earthwork required to the latter, it was judged prudent to start with the limit of Rs. 300. The experience gained on these minor works shows most clearly that the raiyat, to whom his tank is every thing, is not only not averse to his contributing his share of labor, but has, in many places, cheerfully come forward to make the revival of the system a complete success. The promise of Government to do at once the masonry and stonework to minor tanks, on the condition of the completion of the earthwork by the raiyats themselves, has already led to the raiyats under some of the larger tanks voluntarily undertaking to do the earthwork to their tanks also, provided a sluice and waste-weir were promptly given them as had been promised to tanks below the 300 rupee limit. With regard to very large tanks, however, requiring heavy earthwork, it may not be proper to throw the whole burden on the raiyats. To meet such exceptional cases, we may perhaps continue the present system of demanding a money contribution in partial commutation of the raiyats' obligation, or the better alternative would probably be to prescribe the maximum value of the earthwork, which, owing to past neglect, has now to be made good. In this matter, however, a great deal must always be left to the discretion of each Deputy Commissioner.

I need scarcely remind you gentlemen that the principle that the villagers must do the earthwork required for the proper maintenance of their tanks, and appeal to the Government only when stonework or masonry work is required, is an ancient

GOVERNMENT OF MYSORE

custom of the land, as old as the tanks themselves. Successive Chief Commissioners of the Province took advantage of every opportunity to impress this principle upon the Executive officers of the Government. When the Irrigation Cess was imposed, the Government restricted the appropriation of the funds thereby raised, to the repair and improvement of tanks, as distinguished from mere "maintenance," which was expressly declared to continue as an obligation on the part of the raiyats. So lately as October 1873, the Chief Commissioner in the Public Works Department laid down elaborate rules for the enforcement of this obligation as regards a particular class of tanks, *viz.*, those already dealt with by that Department. The practical enforcement however of the raiyats' obligation as regards all our tanks—whether brought up to standard by the Public Works Department or not—has varied very much with each District Officer's appreciation of the importance of this part of his duty. In some Districts, notably in the Bangalore District, the raiyats were made to fulfil their obligation, and the tanks generally are in excellent condition; elsewhere, as in Tumkur and Mysore, the raiyat was allowed to forget his duty to his tank and the tanks generally are in very bad order. To add to this unsatisfactory condition of things, the Famine intervened and completely disorganized our administrative machinery. And the different opinions from time to time expressed as to the future tank-policy of the Government contributed not a little to unsettle people's minds. Under such circumstances, His Highness the Maharaja's Government deem it of paramount importance to declare and enforce a definite policy on the question, and hence the scheme above described which aims at the re-establishment of a formerly fully recognized custom—a scheme moreover which is essential for the well-being of the Province, for, it is possible in no other way to cope with the work of maintaining, in perfect safety, the enormous number of tanks, large and small, scattered all over the Province. When once this end is attained,—and it is possible to attain it only by the raiyat making good the deficiencies due to his past neglect—the annual work required of him for proper future maintenance will indeed be very slight, and the Government will always undertake all work of improvement, all stone and masonry work, and also repair all damage done by breaches and other inevitable accidents beyond the power of the raiyat to avert.

Such in brief is the tank-policy of the Government. And I here appeal to you, as Representatives of the various Taluks of the Province, to endeavour at every opportunity to impress on the people of your Taluks, that Government, in pursuing this policy, are influenced solely by the desire to place their magnificent tank-system on a thoroughly satisfactory and workable footing; that the ultimate benefit will be to the raiyats and villagers concerned; and that, in contributing voluntary labor to works on which not only their food-supplies but their domestic water-supply mainly depend, they are but reverting to a time-honored custom.

I will only add that it is proposed to issue shortly a complete set of rules on the subject of raiyats' obligations to tanks. Copies of a draft of these rules will be circulated among you, and the Government will be glad to receive from you any practical suggestions you may wish to offer, so as to better secure the end we have in view.

Proceedings of the Dewan to His Highness the Maharaja of Mysore, (Public Works Department),—dated 8th May 1888.

Nos. 1996-363—2013-80, DATED BANGALORE, 8TH MAY 1888.

YALADAHALLI TANK, MALVALLI TALUK.

ORDER.—With his memorandum of 23rd April, the Superintending Engineer submitted correspondence connected with the above tank. From this, it would appear that the tank was restored and brought up to standard by the Public Works Department in 1878, grade stones having been fixed to indicate the level up to which the bund should be maintained. Under the Rules of 1873, the maintenance of the tank thenceforward devolved on the raiyats.

2. The tank breached during the heavy rains of October 1887, when the bund was over-topped by the flood in 3 places. The Officers of the Public Works Department attributed the damage partly to the neglect of maintenance of the bund, and partly to the diversion of the weir channel by the raiyats. On the other hand, the Revenue Sub-Division Officer attributed the breach to natural causes rather than to any neglect of the bund. He endeavoured to persuade the raiyats to make good the damage, but this they expressed their inability to do, the work required being very considerable. After some correspondence on the subject, the Deputy Commissioner suggested that, if there was any doubt as to the cause of the damage, a prosecution might be instituted against the raiyats, so that the question might be decided by evidence and judicial enquiry.

3. As pointed out by the Superintending Engineer, the fact that the level of the bund had been allowed to wear away in parts to from 2 feet to 3 feet only above the level of the kodi, *i. e.*, from 2½ feet to 3 feet below the maintenance levels indicated by the grade stones, and that the bund was over-topped by the flood, is sufficient evidence that the breach was directly due to defective maintenance. The diversion of the kodi nullah may also have contributed, but in a minor degree. The Revenue Officers, who inspected the tank, do not state whether or not any attempt was ever made by the raiyats to maintain the earthwork. They confine themselves to discussion of possible causes of the breach as alleged by the villagers.

Under the circumstances, it is clear that the Rules of 1873 were distinctly evaded, and to this evasion Government must directly ascribe the destruction of the tank. The proposal of the Deputy Commissioner to institute a prosecution must have been made without a proper study of the bearings of the whole question or of

the existing rules which apply to it. A prosecution in this case would be no more reasonable than a civil suit for the recovery of Government revenue. The case is one for which a special procedure provided in the Rules published in Chief Commissioner's Notification of 2nd October 1873, which have the force of law, and it is the duty of the Revenue authorities to enforce now such procedure, as it was their duty to cause the raiyats to maintain the tank from year to year, or in case of failure to have done whatever work was necessary and recovered the cost thereof from those in default.

5. Though the breach was evidently due to gross neglect to maintain on the part of the raiyats, yet the Government will, as a matter of concession, fill in the breach, but the raiyats must be made to do the needful earthwork required to bring the bund up to the standard fixed for it in 1878. If this work is too great a burden for the raiyats, then part of it should be done out of a fine to be imposed upon the Patel and other Revenue officials who neglected their duty. The Deputy Commissioner will report how he proposes to execute this order; he will also report for the information of Government, the names of the Amildars who have been in charge of the Malvalli Taluk since 1878; how often the tank was inspected by the Amildars or by the Assistant Commissioner, or Deputy Commissioner, and whether any or what steps were taken to require the raiyats to maintain the bund at the standard fixed for it when restored.

6. This is the second instance brought to the notice of Government within a very short time, of the gross neglect of the Rules of 1873 in the Mysore District. The Deputy Commissioner must immediately issue a circular to all Amildars in his District, calling their attention to the Rules of 1873 and enjoining them to inspect at once all tanks brought up to standard since 1870 and to satisfy themselves that the bunds are all maintained at the standard fixed for them. The Deputy Commissioner must also obtain periodical information regarding tanks inspected or dealt with by Amildars under the above circular.

By order,

C. BOWEN, *Lieut.-Col., R. E.,*

Secretary to the Government of Mysore,
P. W. D.

To—Chief Secretary to the Dewan.

The Deputy Commissioners of Districts.

The Executive Engineer, Mysore Division, for information, with reference to correspondence ending with his No. 162 of 14th ultimo, the enclosures of which are returned.

All other Executive Engineers (except Sanitary Engineer and Palace Division.)

Circular No. 68.

MYSORE CHIEF COMMISSIONER'S OFFICE,
PUBLIC WORKS DEPARTMENT, IRRIGATION BRANCH,
Dated 6th September 1870.

To

ALL SUPERINTENDENTS AND EXECUTIVE ENGINEERS.

Circular Memorandum.

I. The attention of the Chief Commissioner having been drawn to the practice of obstructing unauthorizedly the waste weirs of tanks and channels and the damming up of channels by the raiyats and to the great delay in removing such obstructions even when brought to notice in spite of the repeated orders that have been issued on the subject, he is now pleased to order that in future all such obstructions shall be at once removed by any Officer or Subordinate of the Revenue or Public Works Department who may become aware of their existence and that the cost of such removal shall be recovered by the Revenue Department from the parties they may find guilty of having constructed or caused such obstruction.

II. In all cases in which such obstructions may be removed by the P. W. Department, the Executive Engineer will send in his bill for the work to the Deputy Superintendent without the least delay, giving such information regarding the matter as he may have been able to collect and requesting that the requisite inquiries may be made and the amount recovered and forwarded to him. The expenditure until recovered will appear in his accounts as a miscellaneous advance.

III. It is to be understood that the above order in no way relieves the Taluk and Village authorities from the responsibility of seeing that Government works are not tampered with or injured in any way.

By order,
W. R. JOHNSON, MAJOR,
Under-Secy. to the Chief Commr. of Mysore.

Circular No. $\frac{173\text{-}4.}{839\text{-}40.}$

MYSORE CHIEF COMMISSIONER'S OFFICE,
PUBLIC WORKS DEPARTMENT, IRRIGATION BRANCH,
Bangalore, dated 13th March 1875.

To

THE COMMISSIONERS OF DIVISIONS.

Memorandum.

1. It has been brought to the notice of the Officiating Chief Commissioner that the free flow of water over the kodies of many of the tanks in the Province is obstructed by the upright stones originally placed there to facilitate the annual construction of the turf bunds raised on the crests of the weirs to retain a larger supply of water for Vaishakha cultivation.

Nos. 38 and 79 of the 6th June 1870, to Commissioner, Nundydroog. Nos. 39 and 80 of 6th June 1870 to the Comr., Ashtagram. Nos. 40 and 81 of 6th June 1870 to Comr., Nagar.

2. The erection of these turf bunds having been prohibited by the Chief Commissioner's Circulars marginally noted, these upright stones are now in most cases of no use and the Chief Commissioner accordingly directs their removal.

3. In exceptional cases, these upright stones have been retained for tanks where there is considerable traffic across the weirs to facilitate and make safe the passages of the people during floods. Special report of all such cases must be made when they will be specially exempted by the Chief Commissioner from the ruling in this Circular but even in such cases the stones must be placed with their thin edges instead of their broad sides to the tank so as to interfere as little as practicable with the effective discharge over the weirs.

By order,
W. CHRYSTIE, MAJOR, R. E.,
Offg. Under-Secy. to the Chief Commr. of Mysore.

Circular No. $\frac{174}{840}$

Copy forwarded to Executive Engineers, Irrigation Divisions, for information.

W. CHRYSTIE, MAJOR, R. E.
Offg. Under-Secy. to the Chief Commr. of Mysore

13th March 1875.

Proceedings of the Chief Commissioner of Mysore, Department of Revenue, Agriculture and Commerce, 24th April 1878.

READ AGAIN :—

Chief Commissioner's Proceedings No. 8983—44, dated 17th January 1878, communicating correspondence anent the bunding up of weirs of tanks and calling for an opinion as to the advisability or otherwise of applying to Mysore the Rules issued by the Madras Board of Revenue with their Circular No. VII of 1877.

READ ALSO :—

2. Letter No. 252, dated 19th February 1878, from the Commissioner of Nundydroog Division.
3. Letter No. 659—124, dated 27th February 1878, from the Commissioner of Ashtagram Division.
4. Letter No 1318—246, dated 24th March 1878, from the Commissioner of Nagar Division.

No. 542—R. 5, DATED, BANGALORE, 24TH APRIL 1878.

ORDER THEREON.—The Commissioners and Deputy Commissioners who were consulted being generally agreed as to the application of the Rules above referred to, to the Mysore Province, subject to the modifications proposed by the Officiating Chief Engineer, Major Moncrieff, and the Superintending Engineer for Irrigation, Colonel Johnson, the Chief Commissioner sanctions the adoption of the following Rules which will be published in the *Mysore Gazette* for general information.

To—The Commissioners of Divisions.
The Deputy Commissioners of Districts.
The Chief Engineer, D. P. W.
The Compiler, Mysore Gazette.

T. CLARKE,
Secretary.

RULES.

In modification of existing orders which prohibit the construction of temporary dams for the increased storage of water in tanks, the Chief Commissioner is pleased to direct that such dams may be erected over the waste weirs of tanks other than those under the immediate control of the officers of the Department of Public Works, or which have not been already raised to standard by the Irrigation Department, under the express orders of the Deputy Commissioner to be issued in each case, subject to the following conditions :—

(1) The materials used in constructing temporary dams must be such as may be readily removable.

(2) The temporary dams should be wholly or partially removed as circumstances require when the water rises to such a level as to indicate danger to the tank.

(3) The temporary dams should be broken up once a year to prevent consolidation to such an extent as to render them not readily removable.

(4) In the case of works such as chains of tanks, tanks adjoining public roads and lines of railway, the waste weirs on which temporary dams have been constructed must be cleared at least a fortnight before the usual date of the setting in of the periodical rains.

(5) It will be the duty of the village officers to have their tanks watched day and night during rainy weather, and they will be held responsible that all precautions are taken to clear the waste weirs whenever danger may be apprehended.

(6) In the event of the bursting of a tank or any injury occurring to works owing to the neglect of such precautions, the damage will have to be made good by the raiyats holding lands under it, and further no claim to remission of assessment will be allowed.

(7) Deputy Commissioners of Districts will decide in what cases temporary dams may be used, and in respect to all tanks of any size or importance will obtain the concurrence of the District Engineer thereto. The height to which the temporary dams may be carried in each case should be recorded in the order issued by the Deputy Commissioner.

By Order,

T. CLARKE,
Secretary.

GOVERNMENT OF MYSORE

To—*The Dewan of Mysore for orders.*

The construction of temporary dams over the waste weirs of tanks or the increased storage of water.

1. In Chief Commissioner's Proceedings No. 542, R. 5, dated 24th April 1878 Deputy Commissioners are authorized to permit the construction of temporary dams over the weirs of tanks other than those under the immediate control of Officers of the P. W. D.

2. As all tanks have for some years past been under the control of the P. W. D., it appears necessary that the above orders should be cancelled and that others should issue.

3. Moreover inspection of irrigation works of late years show that temporary dams have very frequently been erected, apparently without authority, and not in accordance with the rules contained in the above Proceedings.

4. The execution of earthwork to a large number of tanks by the raiyats in certain selected taluks will surely be supplemented by a strong desire to raise the weirs. It is therefore the more essential that some definite rules be at once issued in this matter in the P. W. D., and the same notified in the Mysore Gazette.

5. The rules proposed are drawn up separately. The former orders on the subject are also put up.

C. BOWEN, Lt. Col., R. E.,
Secretary, P. W. D.

Dewan's Orders.

Please see remarks on the draft within. Do you object to the alterations therein proposed? In connection with our Tank Schedme, we must give more authority to Revenue Department in such matters.

16*th April* 1888. K. S.

Draft Rules for the construction of temporary dams over the waste weirs of Tanks and Anikats.

1. No temporary dam of any description whatever to be erected over the weir of any tank or over any anikat situated in a Government or Inam village without the *written* authority of the *Executive Engineer.

2. The materials to be used to consist of earth and sods alone, anything like logs of wood, boughs of trees, stones, &c., are strictly prohibited.

3. All temporary dams to be removed annually before the 15th April.

4. These rules do not apply to the tanks immediately above the Mysore State Railway line. Temporary dams over the weirs of these are strictly prohibited. Any other cases of importance as affecting Madras Railway or important lines may be added to their prohibition.

1*st July* 1887. C. H. M. KENSINGTON.

**Dewan's Remarks.*

Why should not this be the Deputy Commissioner as regards tanks above, say, Rs. 500 revenue or of serial importance, and the Amildar regarding all other tanks. Rules should of course be laid down in that case for their guidance.

K. S.

Draft Rules for guidance of Executive Engineers in connection with above.

1. In *no case* is water to be stored up to a level of within $4\frac{1}{2}'$ or $1\frac{1}{2}$ yds of the lowest part of the centre portion and 3′ or 1 yd of the lowest part of the flank of any tank bund.

2. The maximum height of any temporary bund to be $1\frac{1}{2}'$ or $\frac{1}{2}$ yard. Special sanction of the Superintending Engineer to be obtained in every case where it may be considered desirable to exceed this height.

3. For upper small tanks, the height of the temporary dam should be limited to 1′ or $\frac{1}{3}$ yard. For large tanks at the bed of big drainage areas, the height may be increased at the discretion of the Executive Engineer to $1\frac{1}{2}'$ or $\frac{1}{2}$yd.

4. The height of the temporary dam to be measured from the lowest point of the waste-weirs, where any permanent structure exists. Where no such structure exists, a permanent immovable mark to be erected at the cost of the villagers, to define present weir level, and the height of the dam to be measured therefrom. Present weir level to be ascertained by the water mark on the revetment or sluice stones.

5*th July* 1887. C. H. M. KENSINGTON.

Construction of temporary turf bunds on the weirs of tanks.

To—Secretary.

1. I would not have made the suggestions I did in my note of 5th July 1887 on the above subject, had I, for a moment, thought the turf bunds were to be erected on the orders of the Revenue Officers, and particularly of Amildars.

2. It will be practically impossible to enforce the restrictions as to the level of the temporary bunds and great danger will result to all tanks, if the control of such be taken from the Executive Engineers.

3. In fact greater restrictions than those contained in the rules seem desirable even in granting the permission to Executive Engineers, for example, a list of all such tanks should be sent to our Office, and these tanks should be inspected annually by an Upper Subordinate or Engineer Officer.

18*th April* 1888 C. H. M. KENSINGTON.

To—*The Dewan of Mysore for orders.*

1. The question of temporary turf bunds on the weirs of tanks has been before me ever since your Endorsement of 16th April last. I have not lost sight of it, on the contrary, I have been constantly turning it over in my mind and discussing it, but the time has come for a definite decision. It is most difficult of solution, for the results have to be looked at from many points of view.

2. At first sight, it would appear most desirable to store up as much water as we can at the end of the rainy season, but there comes the difficult point that if we give indiscriminate leave to the raiyats so to impound water that would otherwise pass away, we may benefit one tank to the direct loss of the tank or tanks below.

3. If all the tanks in a chain or series were full, well and good; but if the terminal tanks have not filled then the turfing up of the tanks above prevents the filling of the lower ones, deprive them in fact of their legitimate supply, and it is these lower tanks that are the big and important ones. I had thought at first of allowing the turfing up of a particular tank only after the tanks lower down are reported full, but what with the enormous number of tanks, and the tanks in any given chain being in different taluks and even in different districts, such a restriction would prove impracticable in working.

4. All things considered, I think the best plan will be to limit the permission to the bottom tank of a series or sub-series. These are the tanks in which it is of real importance to store up water that would otherwise go to waste, and as turfing up the weirs of the tanks above them may seriously affect them, I would deal with them alone.

5. I may remark that if it be left to the Amildars to sanction turfing to tanks with revenue less than Rs. 500, the scheme would simply degenerate into wholesale turfing up of weirs to the serious detriment of our large tanks.

6. Having weighed the matter carefully I am of opinion that, at all events for the present, permission to turf should be granted only to terminal tanks and that this permission had best rest with the Executive Engineers who are better acquainted with the condition of these tanks than anybodyelse. The number of these too being limited, it will be within the power of the Executive Engineers to deal with them. Were we to extend the scheme to upper tanks, then, I believe, it would be beyond the power of the Executive Engineers to decide promptly and satisfactorily about them, and the sanction might rest with the Deputy Commissioners.

7. It occurred to me at one time that it would promote the restoration of tanks by the raiyats as well as the maintenance, if permission were given to turf up the weir of any tank that had been brought up to standard by them or that had been reported as thoroughly satisfactorily maintained. In one sense this idea strongly commended itself to me, but I abandoned it eventually on the definite grounds of likelihood of more injury to our big tanks low down than of gain to our small ones high up the valleys.

8. The subject is one worthy of much consideration, after maturely weighing the "pros & cons", the above is the conclusion I have arrived at. If agreed to, I would have lists prepared of the tanks to be included in the permission.

BOWEN, Lt. Col., R. E.

4*th October* 1888. *Secretary, P. W. D.*

Public Works Secretary's Memo. of 4th August 1888.

To—The Dewan of Mysore.

FOR ORDERS.

The accompanying letter from the Deputy Commissioner, Kolar, has a direct bearing on the point discussed by us 2 days ago *viz.*, the non-extension of cultivation below tanks which have been enlarged and improved.

The case referred to by the Deputy Commissioner is the Betamangala tank which holds at present far more water than what is actually required by the lands now irrigated. It bears out what I said that the raiyats holding land immediately below the bund retained the water so as to irrigate 2 and even 3 crops to the detriment of the lands lower down the channels.

I see no reason why the rules applicable to our river channels should not be made to apply also to the channels derived from such large reservoirs as the Betamangala, Ramsagar, Hoskote and others. We could follow up the introduction of these rules by the establishment of permanent pipe sluices and the general improvement and grading of all important tank distributaries, the condition of which is far from what it should be.

4th August 1888.

C. BOWEN, LT.-COL., R.E.,
Secretary, Government of Mysore, P. W. D.

ENCLOSURES.

No. 478.

From

The Superintending Engineer of Mysore.

To

The Deputy Commissioner, Kolar District.

Dated, Bangalore, 14*th February* 1888.

SIR,

I have the honor to forward extracts from an inspection note by Major Kensington, Assistant Secretary, P. W. D., on the Betamangala large tank, dated 2nd January 1888.

2. I would draw your particular attention to the fact that though the capacity of the tank was increased 40 per cent in 1876-77, there has been no increase in revenue, also that in spite of the repair of the channels carried out then, the east channel, is now in such a state that water can scarcely flow down 2 miles of it, the cultivation which was thrown back 9′ is now close up to the channel bank, the latter which was made 3′ wide at the top is barely 6″ wide, and its bank has been cut through wherever the villagers like.

3. Although more work on the part of Government is desirable to put these channels into efficient order, before incurring the expenditure, I would be glad to be informed what guarantee there would be, that the raiyats of the villages far down the channel will get a proper supply of water, also what measures you would propose to prevent the retention of water for a 2nd or even 3rd crop, off lands near the tank, and how a rapid deterioration of the channels hereafter will be provided against.

4. I would also request an explanation be furnished for the low revenue under the tank since 1876-77 notwithstanding its improvement, and increase of capacity from 612 to 856 units.

I have, &c.,
C. BOWEN, LT.-COL., R.E.,
Superintending Engineer of Mysore.

Inspection Note, dated 2nd January 1888, by Major Kensington, R.E., Assistant Superintending Engineer, and Assistant Secretary, P. W. D., on the Betamangala Large Tank, Serial No. 941 of the Ramasagara Series.

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3. Most of the prickly-pear has been removed from the bund, which is fairly maintained in places, and nothing has been done in others. A final levels statement is put up which will show how much the bund has been neglected since 1877, when work of restoration was complete. It is chiefly in the flattening of the front slope, and erosion of the edges of the slopes where deterioration mostly occurs. I don't think anything whatever has been done towards maintenance till this year and I am much surprised the deterioration has not been worse. Cattle are allowed to graze over the bund.

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6. The most important work, however, now required to this very fine reservoir, is a *thorough* improvement of its Irrigation Channels. Inspected some 2 miles of the left bank channel, and was informed that of the right bank was in a similar state. Before commenting in detail on the different channels, I will make a few remarks which will, I fancy, clearly show the necessity for some improvement in the matter of irrigation below this tank.

7. When the tank was restored in 1876, the weirs were raised 2′ and the capacity of the tank increased from 612 to 856 units, or very nearly 40 per cent, the lifting dams below the weirs and the heads of the 2 main Irrigation Channels were very much improved. Also the existing channels were cleared out, pipe sluices fixed, the channel banks considerably strengthened, and a few weirs were constructed. I got the estimates for the channels sanctioned with great difficulty by Colonel Johnson, Superintending Engineer at that time. As he considered the deterioration due to neglect by the raiyats, and that in a very short time they would be in the same state as they were before. Moreover at the time, the improvement of tanks' channels was not undertaken by the P. W. D. I very much regret to have to report that his expectations as to deterioration have been fully realized.

8. In spite of the increase in capacity and the expenditure of Rs. 1,500 on the 2 main channels, I see there is little, or no more, terraced land irrigated than formerly, and as of yore, the raiyats of the villages at the end of the left bank channel, the only channel of any length, are loud in their complaints of getting no water and failure of their crops, and this too, when a large supply remains in the tank. The fact is, the water is retained by the cultivators at the head for a 2nd and even a 3rd crop in good years, also to the utter impossibility of getting any volume of water down the channel in its present condition.

9. I would also state here that the gross area of terraced land as per Serial Survey is 631 acres against a capacity of 856 units, and as a large area is cropped in Kartika, and from my own personal knowledge of the tank, it cannot fill less than $1\frac{1}{4}$ times, I would put it down at $1\frac{1}{2}$, it should thus irrigate something like 1,070 acres, whereas the accounts will certainly show less than the terraced area, or 631 acres. This will explain how 2 and 3 crops are taken off a large area to the benefit of the land-holders near the bund, to the detriment of those further off, and certainly at a great loss to Government, in the way of revenue.

10. As regards the Irrigation Channels. *No. 1 left (main) channel.* This is fed from No. 1 sluice in weir and No. 2 main sluice, the water being carried across the rock weir by a lifting dam, and wall with head sluices. At the end of the masonry wall, the bank is leaking very badly, due to bullocks having trodden down the banks till the water tapped it, and has nearly breached it, in spite of being a strong bank revetted with stone in the rear. Thence the channel throughout has been cut through in several places where no pipes have been fixed, the cultivation has come right up to the bank though it was thrown back some 6′ to 9′ when the channel work was done in 1877. The banks are covered with hungi and prickly-pear, so that to walk over them is an impossibility, and in a great many places have worn down to less than proper full channel level, with a width only 6″. In fact it is astonishing to observe what deterioration can result from neglect and wilful destruction in the short space of 10 years. There are no traces of the old bank which was made 3′ wide at top almost throughout.

GOVERNMENT OF MYSORE

11. *No. 2 left centre channel* fed from No. 2 main sluice. This is a short channel irrigating a small area between the left weir channel and centre old breach channel. Nothing is required excepting a continuation of the masonry channel in rear of the bund. This channel has breached here from want of timely maintenance, it will be better to make it "pakka" however in rear of the bund to the end of the revetted portion.

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C. H. M. KENSINGTON, MAJOR, R.E.,
Asstt. Supdg. Engineer and Asstt. Secretary, P. W. D.

No. 691—231.

From

The Deputy Commissioner, Kolar District.

To

The Superintending Engineer of Mysore.

Dated 2nd July 1888.

SIR,

Adverting to your letter No. 478 of the 14th February last, forwarding extracts from an inspection note by Major Kensington on the Betamangala large tank, I have the honor to state that from the report received from the Amildar of Bowringpet it appears, that the revenue below the tank has slightly risen since its restoration; but the result is not, I regret to observe, as satisfactory as could be desired, owing probably to the irregular distribution of water from the Irrigation Channels by the Taluk authorities concerned. This appears to be due to the want of any systematic principles on this point. The raiyats on the top utilize the water for 2 or 3 crops as reported by the Assistant Superintending Engineer, while those below are left without sufficient irrigation for their lands, the supply becoming thus exhausted, so as to prevent fresh lands being brought under wet cultivation. I would therefore beg to suggest the advisability of introducing the regular system of irrigation pipes of prescribed dimensions as in the case of river channels in the Mysore and Hassan Districts, clearly marking down for the information of the raiyats the particular lands to be irrigated by each pipe, which should be numbered. Every raiyat should, under a penalty, be restricted to the sluice fixed for his land and no water should be used for a 2nd crop by any of the raiyats without previously obtaining the permission of the Amildar, who should, in his turn, see that no such permission is granted, until he has satisfied himself that the requirements of all the raiyats below the channel have been fully met, and that an ample margin has been left for the irrigation of fresh lands which may be taken up for cultivation in the year. The rules contained in the late Chief Commissioner's Notification No. 326, dated the 13th March 1874, (copy enclosed for ready reference) declaring certain acts as channel offences punishable by the Amildars on the Revenue side, may with advantage be enforced in this District in the case of channels under the more important tanks like the one in question. It seems to me desirable that a requisite number of "Saudis" or Nirgantis should be appointed to attend to a fair and equal distribution of water to all lands of the raiyats below the channels, and to see that the channel bunds are maintained in proper order by the raiyats promptly bringing to notice any neglect on their part in this respect. The appointment of a Manegar for these channels may also hereafter be considered but in the meantime the Manegar of the Ramsagara channels may be directed to look after the Betamangala tank channels, and superintend the work performed by the "Saudis" employed thereon.

I have, &c.,
C. SOOB RAO, *Deputy Commissioner.*

DEWAN'S ORDERS ON P. W. SECRETARY'S MEMO. OF 4TH AUGUST 1888.

Seen. I will gladly consider any general scheme you may formulate as in contemplation.

1*st July* 1890. K. S.

Proceedings of the Dewan to His Highness the Maharaja of Mysore, (General),—dated 1st October 1888.

CAMP No. 1382—90, DATED MYSORE, 1ST OCTOBER 1888.

ORDER.—The Government having recently sanctioned several large irrigation projects, whereby lands hitherto entirely waste or paying only dry assessment will become convertible into wet lands and be largely enhanced in value, and other similar projects being now under contemplation, it has become necessary to lay down the principle on which contribution will in future be levied from the land-holders benefited by such works.

2. Contributions in lump sums are often promised by raiyats for such irrigation works, but the distribution of such sums among individual raiyats is often a matter of considerable difficulty, and has been known to place an undue burden upon those who have the least amount of influence in the village. Moreover, the levy of a contribution in anticipation of a future benefit is generally felt as a hardship by the raiyats on the one hand, while on the other the Government, in the absence of a fixed rule on the subject, generally receives much less than it has a right to expect. These considerations induced the Government in the case of the Rampur Channel now under construction to abandon the levy of a contribution in a lump sum from the raiyats of the various villages to be benefited by this work, and in lieu of such a contribution to stipulate with them for the payment by each individual of Rs. 30 per acre of his dry land converted into wet by the new irrigation work, such payment being made in the year when water is actually given for wet cultivation. This arrangement was readily accepted by the raiyats concerned and is a great improvement upon the old system of taking a contribution in one lump sum. In the case of the proposed reservoir across the Chitravati river in the Kolar District, the raiyats promise a lump sum contribution of Rs. 4,000, but for reasons above given the Government are of opinion that a contribution according to the acreage of each individual's holding would be preferable in every way, the rate per acre being of course fixed according to local circumstances. Such a contribution per acre of dry land converted into wet will always be levied under a mutchalika previously executed by the raiyats concerned. In the opinion of the Government, such a levy is perfectly equitable in every way, and only amounts to the working out on new and equitable lines a very old policy. When Government undertake a large irrigation work which adds great value to the holdings below, *it has* a right to participate in some moderate degree in the additional value thus imparted. It is sometimes contended that the wet assessment imposed is a sufficient return for the capital which Government spends on a new work. This is not the case. Suppose that the value of a particular piece of land *now* dry and assessed at 12 annas, is Rs. 30, and that after construction of an irrigation work, it is assessed at Rs. 4, but notwithstanding such assessment acquires a market value of Rs. 100. The increase of Rs. 70 is quite irrespective of the enhanced assessment, but is due partly to the construction of the irrigation work, and partly to the position of the land itself. The raiyats concerned generally come forward to pay a voluntary contribution towards the cost of the work, and such contribution is justly regarded by the Government as a strong proof of the popularity and usefulness of the proposed work, and as an additional ground for undertaking its early execution.

3. At present, however, there are no definite rules as to when such contributions should be expected as a matter of course, and several large works being now in hand, the Government lay down the following rules for adoption in the case of every irrigation work (both new and extension and improvement of old works) which is likely to cost over Rs. 25,000 or which is an extension of a river channel. These rules shall, however, be applicable only where the lands have a ready saleable value.

1*st*.—When a proposal for any such work as aforesaid has been made and is under investigation or consideration, no darkhast shall be accepted for any Government unoccupied dry land likely to be converted into wet by such work. All such unoccupied dry lands should be reserved

for sale by public auction after the completion of the work. Whenever an Executive Engineer has orders to investigate a project for work of this kind he should forthwith give notice of the fact to the Deputy Commissioner or Deputy Commissioners concerned.

2ndly.—No contribution in a lump sum shall be levied in respect of such work from the holders of Inam or Government occupied lands likely to be benefited by the same, but they should be called upon to execute mutchalikas binding themselves to pay to Government, on the completion of the work, a specified contribution per acre of occupied dry land which may be converted into wet, without in any way affecting the liability of the land, if Government, to pay a wet rate of assessment and, if Inam, the prescribed water rate.

3rdly.—The contribution per acre as per the foregoing rule shall, according to the circumstances of the raiyats concerned, vary from a third to a fifth of the difference between the local market values of an acre of dry land and of an acre of wet land. The character and permanence of the irrigation supplied, the quality of soil, the agricultural labor available, will all be taken into account in fixing the market values as above.

4thly.—A report of the fact that mutchalikas under these rules have been taken should always accompany the estimate for the work. submitted for the sanction of Government.

5thly.—In special cases in which the Deputy Commissioner may be of opinion that these rules should not be applied, or that the rate above prescribed should be reduced or increased, or that no contribution whatever, or only a contribution in a lump sum from the entire body of land-holders should be levied, a statement by the Deputy Commissioner of his opinion with full reasons therefor should accompany the estimate submitted for sanction.

And *6thly.*—Where holders of not less than $\frac{5}{6}$ths of the occupied area execute mutchalikas under these rules, and the holders of the remaining area refuse to do so, the matter should be reported in the statement accompanying the estimate, for the orders of Government; and the Government will then decide whether the work should be abandoned by reason of such refusal or whether the refusing land-holders should be compelled to pay their due share of contribution either in one lump or by means of a temporary addition to the wet assessment for a specified number of years, (say by seven or eight annual payments of a sixth of the contribution fixed).

4. These rules shall at once be brought into operation in regard to all works now in hand of the description specified in the preceding paragraph. In regard to small works (not coming under the above rules), it is not at present the intention of the Government to disturb the existing practice.

R. VIJAYINDRA RAO,
Chief Secretary.

To—The Deputy Commissioners of Districts.
The Secretary, Public Works Department.

Exd.—K.S.

COVER DIGEST OF MYSORE

Proceedings of the Dewan to His Highness the Maharaja of Mysore, (General),—dated 22nd January 1889.

No. 6769-77—Cir. 190, dated 22nd January 1889.

Order.—To Rule 1, para 3, of Dewan's Proceedings No. 1382—90, dated Mysore, 1st October 1888, the following sentence shall be added, *viz* :—" Government unoccupied wet land should similarly be reserved for sale."

R. VIJAYINDRA RAO,
Chief Secretary.

To—The Deputy Commissioners of Districts.
The Secretary, Public Works Department.

Exd.—K.S.

GOVERNMENT OF MYSORE

Colonel Bowen's Note to Dewan, dated 18th February 1889, regarding rules for Channel Offences.

With reference to your endorsement of 24th January 1889, on my note on Arsinkatte Channel, I submit a suggestion by the Deputy Commissioner, Kadur District, to the effect that the rules published in Chief Commissioner's Notification No. 326 of 13th March 1874, be introduced and enforced on each important channel when brought up to standard.

It seems to me these rules would meet the case, if only they be enforced. I doubt very much that Amildars will enforce them properly, for I am aware that on the Ashtagram Channels the duty of imposing proper penalties for channel offences is evaded by the Amildars, and for the Channel Subordinates to bring home an offence to a guilty party is so troublesome, they shirk making charges.

However, the rules may be tried and the Deputy Commissioner asked to do his best to have them enforced.

Rule IV should not be omitted. Cattle are a constant source of trouble and damage to banks, and if raiyats will *wilfully* allow them to graze on channel banks, they should be punished.

Something of this sort is very necessary. You have no idea of the way the channels in the Kadur District are treated. Close by the town of Kadur itself, on inspecting one of the channels, I found the bank so encroached on by the holders of gardens below as to be fenced off so strongly, the fences going down to the water's edge, that it was quite impossible to push on, and the inspection had to be abandoned. Mr. Meiklejohn restricts the introduction of the rules to channels when "brought up to standard." I see no reason why they should not be made applicable to *all* channels, standard or no standard. Surely wilful damage to a Government work ought to be a punishable offence, whatever the condition of that work. It is putting off a much needed reform to limit it to channels recently repaired by Government, which is all that "brought up to standard" means.

I would add a clause providing for the removal of silt and weeds, as suggested by the late Colonel Johnson at the foot of the rules, but I am doubtful whether neglect to remove silt and weeds could be equitably construed into a penal offence; Nor for the matter of that, does the neglect under Rule IX appear to be a penal offence. Recovery of cost of clearing silt as a revenue demand seems to be the way to deal with this.

BANGALORE,
Dated 18th February 1889.

C. BOWEN, LT.-COL., R.E.,
Secretary to the Government of Mysore,
Public Works Department.

To—The Dewan of Mysore for orders.

The necessity for establishing a proper system of conservancy in connection with the intricate net work of channels in the Kadur Taluk has for sometime engaged my attention.

2. In the "Notes" submitting the numerous estimates that have gone up to you during the last few years for improving these channels, you will have observed how frequently the utter neglect of ordinary maintenance has been brought to notice, and I have more than once remarked that all the expensive work we are doing will in the course of years have to be done all over again, unless effective steps be taken to enforce conservancy.

3. But "conservancy" necessitates establishments at the expense of the State, for it is practically useless to look to patels and village minor officials for efficient help in the enforcement of channel rules. There is no help for it but to appoint a special establishment, whose sole duty will be the watching and up-keep of channels —who will work in fact on the same lines as the Manegars and Saudis of the Ashtagram river channels.

4. In the Kadur Taluk there are twenty-four channels aggregating seventy miles in length. At present there is a channel establishment of one Dafadar, one Manegar (so called) and three Peons, but these men's services are confined to the Iyenkere Tank channels and the Raikalve of the Madak Tank. All other channels are left to Patels, Kotwals, &c.

5. I would propose then to substitute for the above insufficient and inefficient agency an establishment of one Manegar on Rs. 20 and ten Saudis Rs. 5 each. This would amount to Rs. 70 per mensem or Rs. 840 per annum. I would add for the Manegar a pony allowance of Rs. 7-8-0, as he will have to be constantly moving from channel to channel, so that the total cost will be Rs. 930 per annum. Deducting from this the cost of present establishment, Rs. 360, an increase of Rs. 570 per annum is proposed.

6. Is this proposal worth the money? Considering the large revenue dependent on these channels, their dilapidated state from the neglect of years and the inevitable relinquishment of land and lapse of revenue resulting from imperfect maintenance, I think the proposed outlay judicious. It will ensure proper up-keep, effect a proper distribution of water, and obviate future costly repairs and restorations.

7. I would invite your attention to the Deputy Commissioner's letter No. 702 of 17th July 1889 on this subject, and the Kadur Taluk Amildar's memorandum regarding these channels. You will gather therefrom the imperative necessity of putting the conservancy on a better footing and enforcing the rules regarding channel offences embodied in Chief Commissioner's Notification No. 326 of 13th March 1874.

8. One point in the correspondence I would specially allude to. The Deputy Commissioner and Amildar appear to be under the impression that silt clearing is not to be done by the raiyats, and quote Proceedings No. 117-27, dated 6th April 1885; I think I am right in saying that those Proceedings referred only to the Ashtagram *river* channels. From all tank channels and minor channels from streams like the Avati and the Veda, fed by the Iyenkere and Madak Tanks, silt must be annually removed by the raiyats. In fact Government work to such channels should be confined to masonry works, and the repair of heavy breaches or other damages beyond the power of the raiyats to carry out unaided.

9. In submitting these proposals I have not allotted any definite channels or lengths of channel to the ten Saudis to be employed. The allotment of their beats and the assignment to them of definite duties, as well as their general supervision, can best be left to the Revenue Department. The Public Works Department is not at present in a position to assume the control of such establishments.

BANGALORE,
18*th March* 1890.

C. BOWEN, LT.-COL., *R. E.*,
Secy. to the Govt. of Mysore, P. W. D.

GOVERNMENT OF MYSORE

DEWAN'S ORDERS.

The proposed additional establishment for channel conservancy involving an increased expenditure of Rs. 570 per annum is sanctioned.

The entire establishment will be under the direct control of the Amildars, who or their Sheristadars should ride along the entire length of channels in their respective Taluks at least once in 6 months, take full notes of their inspection and of orders given, submit full information in an inspection report in accompanying form to be submitted to the Deputy Commissioner in duplicate; the Deputy Commissioner to issue needful orders on them and send to Public Works Department Head Office a copy of the Amildar's inspection report with the Deputy Commissioner's orders thereon.

The Amildar's first inspection (which should include tanks) should be from August to November, and his second inspection from February to May and his inspection reports should be despatched before 7th December and 7th June. Copies of them should be forwarded by Deputy Commissioner to Public Works Department Office by 15th December and 15th June.

Some such rule should be definitely laid down and strictly enforced. The rules of 13th March 1874 must be adopted, with explanations intended to make their meaning clearer, and adding illustrations under each rule, where necessary.

Other rules are also required, namely, the labor which by custom the raiyats are bound to give for channel conservancy. The custom may be different in different Taluks, but such as it is, it should be always enforced. Maintenance of lower bank is necessary, but not generally that of the upper bank. If the latter is overgrown, it perhaps is so much the better, so long as there is no curtailment of the channel bed.

Weeds and overgrowths in the bed and lower bank and bund should be cleared, and the bund always maintained at the proper standard. As regards silt, I am of opinion that, except in *specified Ashtagram River channels*, it must be done by the Raiyats—*Vide* my Public Works Department Note, dated 21st August 1886.

Please draft orders accordingly and let me see them before issue.

As regards rules of 13th March 1874, they have the force of law, and it may be sufficient to lay down that they apply to *all* channels. But the Government may in their executive order explain and illustrate these rules, but not lay down new rules.

K. SHESHADRI IYER,
Dewan of Mysore.

21*st March* 1890.

No. 1634—330.

EXECUTIVE ENGINEER'S OFFICE, TUMKUR DIVISION
Dated Tumkur, 18th November 1889.

From

The Executive Engineer, Tumkur Division.

To

The Chief Engineer of Mysore, P. W. D.

SIR,

I have the honor to forward herewith copies of the enclosed correspondence between myself and the Deputy Commissioner about the main irrigation channels of the Kadaba tank. I have built Mangalore pipe sluices on these channels, but when I asked him if he can fine people who breach the channel anywhere else, he said he had no authority. It is needless to state that if the channel conservancy rules do not apply to these tank channels, there is no use in improving these channels. I beg therefore you will be good enough to do the needful to make these rules applicable to all tank channels which yield Rs. 1,000 and above.

2. The raiyats do not clear their channels. Some Amildars say that the Dewan (in his Proceedings No. 117-27--Camp, dated 6th April 1885, *vide* Revenue Manual) has decided that raiyats are not liable to be asked to clear channels. I believe these orders are only applicable to the small river channels of Belur and Hassan Taluks, where the estimate provision for clearing silt was once recovered from the raiyats. I beg that definite orders on this point may be passed. I think it will be better to repair and maintain all tank channels yielding Rs. 1,000 and above through Government, the annual allotment being limited to the one anna irrigation cess on the revenue derived from lands under the channels.

3. In fact I think these small channels must be maintained in the same way as the small river channels. The Patel and Shekdar should do the duty of Channel Manegar and Channel Sub-Overseer respectively, and the Nirgantis that of channel watchmen. The channels should be annually cleared and maintained by the Revenue Department who have now the charge of repairs of minor tanks and can easily take this work up in addition.

4. If these proposals are approved, I shall take up all the important channels and deal with them one by one. I am sure if these channels are properly maintained and channel conservancy rules made applicable to them, with the improvements which we can introduce, there should be a very substantial return to Government in the shape of increased revenue. In fact I am sanguine the increase in revenue will be far in excess of the annual repair allotment above proposed to be given.

5. When I lately visited the Maddagiri Taluk, I found a good indigenous system working there for the clearing of the deep Talpurge or spring channels, of which there are a great many in this Taluk. For each channel there are three or four headmen called the "Gamkars," whose duty it is to call the raiyats interested to clear the channel and if any one absents himself he is fined two annas. The fines so collected are used for some common purpose or used towards a public feast. The fine is recovered by the influence the Gamkars hold in the village. It is impossible to introduce the system where it does not exist, but I mention it as I found it was a good system and worked well.

I have, &c.

C. T. DALAL,

Executive Engineer, Tumkur Division.

ENCLOSURE TO E. E. No. 1634—330.

P. W. No. 353.

Dated Tumkur, 23rd September 1889.

From

The Deputy Commissioner, Tumkur District.

To

The Executive Engineer, Tumkur Division.

His Memo No. 1823, dated 16th instant.

In reply, the undersigned has the honor to state that he is not aware of the channel rules being applicable to any tanks just now, and requests he will be so good as to intimate how they are to be made applicable for they do not appear to have any legal force now.

H. NANJUNDARAJ ARS,
for *Deputy Commissioner.*

No. 4910-11.

Dated Bangalore, 28th November 1889.

From

The Chief Engineer of Mysore.

To

The Deputy Commissioner, Tumkur District.

SIR,

With reference to your No. 353, dated 23rd September 1889, to the address of the Executive Engineer, Tumkur Division, stating that you are not aware that the channel rules are now applicable to any tank channels, I have the honor to invite your attention to the late Chief Commissioner's Notification No. 65 of the 2nd October 1873 (published in the Mysore Gazette, dated 11th October 1873, page 180), which clearly lays down the obligations of the raiyats regarding the maintenance of tanks and their subsidiary works (*vide* rule 4) and the duty of the Revenue officers in enforcing the same. I would also call attention to late Chief Commissioner's Notification No. 326 of 13th March 1874, authorizing Revenue officers to punish the channel offences therein detailed by fine, and to have extreme cases falling under the Penal Code, tried by a competent Magistrate. I am not aware that these rules which apply to all tanks with their subsidiary works, and other irrigation works restored from and after 1st November 1873, have ever been abrogated or that it has ceased to be the duty of the Revenue authorities to enforce them. I must therefore ask you to be good enough to take early steps, for the proper maintenance of all such channels in your District, which appears to have been neglected, owing apparently to some misapprehension of the rules.

II. The exemption of the raiyats from the duty of clearing silt, sanctioned in Dewan's Proceedings No. 117-27, dated 6th April 1885, applies only to the Ashtagram River channels, the assessment levied from the lands under which, include a payment for the work of silt clearing to be done by Government.

I have, &c.,
C. BOWEN, COL., R. E.,
Chief Engineer of Mysore, P. W. D.

No. 4911.

Dated Bangalore, 28th November 1889.

Copy to Executive Engineer, Tumkur Division, with reference to his No. 1634—330, dated 18th instant, with a request to report if action on the above is not taken within a reasonable time.

II. This Department with its present staff is certainly not in a position to repair and maintain all tank channels, and undersigned is surprised at Executive Engineer making such a proposal. The Tumkur Division establishment would appear to be unequal to what already devolves on it, yet it is suggested to throw on that establishment, a furthermost troublesome and complicated task.

C. BOWEN, Col., R. E.,
Chief Engineer of Mysore, P. W. D.

No. 491.

Tumkur District Deputy Commissioner's Office,
Camp Kunigal, 10th February 1890.

To

The Chief Secretary to the Government of Mysore, Bangalore.

Sir,

Referring to your docket No. 1097—Camp of the 30th August 1887, I have the honor to state that after I had taken charge of this District, I found the correspondence regarding the supply channels under the Kadaba tank remaining undisposed of, and I therefore referred the matter to the present Amildar of Gubbi for report.

2. Copy of his reply is herewith forwarded together with a copy of my order thereon.

3. It would appear that no further action is necessary now with regard to the organization of a separate establishment for the up-keep of the Kadaba Tank channels, provided the Chief Commissioner's Conservancy Rules of the 13th March 1874 are to be considered to be applicable to all River and Tank channels, regarding which I would solicit early instructions.

4. The question was also submitted for orders in this Office No. 497 of the 25th November 1889.

I have, &c.,
C. CRESS,
Deputy Commissioner, Tumkur District.

REPORT.

1. The channels were in very bad condition, and I have put them now in repair. The western channel which is still under repairs will shortly be completed by the raiyats. But it is said that the western anè, which has been under construction by the Public Works Department, is not yet completed.

2. I don't recommend any establishment for the supervision of the channels or distribution of water, as there is a Patel well paid for the tank itself. But I would beg to recommend the formation of some working establishment to remove the silt, and to keep the channels always in order, as it would be difficult to make the raiyats always to repair them under the present Tank Maintenance Rules which are not in my humble opinion sufficient to give an immediate effect. But if some penal provision such as provided for the punishment of channel offences in the late Chief Commissioner's No. 326, dated 13th March 1874, is provided for the punishment of persons who fail to remove the silt, by a small fine, then it will be very easy to keep the channels in order, at least of such important tanks without any working establishment.

3. All of the raiyats holding lands are not willing to pay the extra cess as can be seen in the statements recorded in the enclosures. Moreover a good many persons are absent from the village who may be expected to bring all sorts of objections by and by, and I beg to think that the consent of a few of the persons cannot bind all others.

2nd February 1890. KANTHIRAVACHARLU,
Amildar.

The Channel Rules framed by the Chief Commissioner are stated by the Chief Engineer and Secretary, Public Works Department, to be still in force, hence the Amildar may enforce proper up-keep and conservancy by means of them. Consequently no further action seems necessary now.

Tumkur,
5th February 1890. C. CRESS,
Deputy Commissioner.

MYSORE P. W. D. CENTRAL OFFICE,

No 4164.

Bangalore, dated 5th September 1890.

To

The Deputy Commissioner, Tumkur District.

SIR,

In reply to your letter No. 491 of 10th February last, transferred to me by Chief Secretary for disposal, I have the honor to point out that repairs to earth-work and silt clearing of distribution channel from tanks are covered by Rule 4 of Rules for maintentance of tanks issued with Government Notification of 2nd October 1873. Such work the raiyats are bound to carry out and in case of default, the procedure is specified in Rule 6. Your reference No. 353 of 23rd September 1889, on this subject, was fully dealt with in this Office No. 4910-11 of 28th November 1889.

I have, &c.,

C. BOWEN, COL., R. E.,

Chief Engineer of Mysore, P. W. D.

From

The Executive Engineer, Ashtagram Channel Division.

To

The Chief Engineer of Mysore.

No. 46 *of* 1891, *dated, Mysore, 4th February* 1891.

Chief Engineer's Camp No. 132, dated 30th ultimo, (forwarding Mysore District Deputy Commissioner's No. 876, dated 24th January 1891) received yesterday, requesting an expression of the opinion of the Executive Engineer on the subject of the proposal to entrust the repairs of the irrigation channels to the Amildars.

With reference to the above, has the honor to state that the undersigned continues to hold the opinion which he has held for the last 10 years on this subject and which he believes to be the same as has been held by successive Superintending Engineers of Irrigation in Mysore since long prior to 1881.

2. The Executive Engineer feels sure that if the repairs of the irrigation channels are entrusted to the Amildars, the channels will inevitably deteriorate, and that, if the system be persisted in, they will breach and be thrown out of action, entailing loss of revenue as well as increased expenditure in their restoration under professional agency.

3. Having regard to the future and to the persistent manner in which opinions opposed to that expressed above continue to be advanced, it might be well to hand over to the Revenue Department altogether the management of some selected minor channels. If this be done, the "*Modus operandi*" should be left absolutely to the Officers of the Revenue Department, with occasional inspection and, perhaps, check levelling by the Public Works Department.

4. The system of "dual control" has been proved to be a complete failure. This system should be discontinued at once, and the management of the channels throughout the year should be entrusted either to the Revenue Department or to the Public Works Department.

5. As the weed clearing is not attended to by the raiyats, some action should be taken to ensure this work being done. Having regard to the fact that much of the land is held by absentees, the re-institution of a special tax to meet the cost of keeping the channels clear of weeds, would seem to be advisable.

6. Where the land is not held by the actual cultivation, it naturally becomes very difficult to get any work of this nature done by the raiyats. Moreover, it will always prove a very difficult task to get the weed clearing done by the cultivators, because the work has to be done by those who do not directly benefit by what they perform. The raiyats cultivating under the upper reaches of a channel are required to clear weeds for the benefit of those who cultivate lower down.

7. One result of the dual control is that complaints are often referred from one Department to another, probably without any result as far as the petitioners are concerned. Such a state of things can scarcely be considered tolerable.

8. The enclosure is returned.

F. J. McLAUGHLIN,

Executive Engineer, Ashtagram Channel Division.

From

The Deputy Commissioner, Mysore District.

To

The Chief Engineer to the Government of Mysore.

No. 876, *dated 24th January* 1881.

With reference to the discussion which took place at the channel conference held in Mysore on 22nd October 1890, as regards the expediency or otherwise of entrusting the work of silt clearing from channels to the Patels of the respective villages on contract, has the honor to forward herewith a copy of a memorandum containing an abstract of the Amildars' reports as well as of the French Rocks Sub-Division Officer's letter No. 251 of the 11th instant on the subject. The undersigned is of opinion that the arrangement which now exists should continue for the present at all events.

NANJARAJ ARS,
for *Deputy Commissioner, Mysore District.*

No. 251.

SUB-DIVISION OFFICE, FRENCH ROCKS,
Dated, Camp Seringapatam, 11th January 1891.

To

The Deputy Commissioner, Mysore District.

SIR,

With reference to your docket No. 699 of 27th November last, on the subject of giving the silt clearing work of the channels on contract to the Pateils, &c., I have the honor to state that the Amildars of the channel Taluk in this Sub-Division, *viz.*, Mandya, Seringapatam, Malvalli and Attikuppa, unanimously state that, if, in addition to their multifarious duties, they are to take up the responsibility of guaranteeing the work in question being efficiently done, they suggest that all interference of the Engineering Department in the matter should cease, and independent authority be given to them to prepare estimates, give the work on contract, take jarib (measurements) and make payments. Further, they recommend the channel conservancy establishment to be placed entirely under their control. If otherwise, they state that they are not prepared to the guarantee expected of them.

I have, &c.

D. NAMAKAL RAO,
Sub-Divisional Officer, French Rocks.

Memorandum of the Amildars' reports received in reply to this Office partly Circular No. 125, *dated 2nd December* 1890, *asking them to give their opinion as to whether the work of removing silt in the river channels may be given on contract to village Patels.*

1. *Gundlupet.*—States that there are in river channels in his Taluk.

2. *Nanjangud.*—Says that if channel Manegar be placed under the orders of the Amildar to supervise the work, the same may conveniently be got done by the village Patels.

3. *Heggaddevankote.*—States that all the channels in the Taluk generally run through Bèchirakh villages, so that he has no confidence that the Patels of other distant villages will do this work satisfactorily.

GOVERNMENT OF MYSORE

4. *T. Narsipur.*—The Patels through whose villages the channels run, have deposed before the Amildar that if advance be given for carrying out the work and the measurement taken by the Taluk authorities, they are willing to do the work; but that if Public Works Department authorities are the parties to measure the work, they are not willing to take up the work. In forwarding these depositions the Amildar says that these Patels seemed to be unwilling to take up the work.

5. *Mysore.*—Reports that the Amildars being unable to supervise the work themselves, he cannot believe that the Patels will do this work more satisfactorily than the Public Works Department people.

6. *Hunsur.*—States that if the work be given up to the Patels, they may do it satisfactorily as the responsibility lies in them.

7. *Chamrajnagar.*—Says that if the work be given to the Patels, the same will be done more satisfactorily without any complaint.

8. *Yedatore.*—Reports that if the authority to measure the work be given to the Revenue Department, this work can be got up through the Patels more satisfactorily.

NANJARAJ ARS,
for *Deputy Commissioner, Mysore District.*

To

The Dewan of Mysore for orders.

In my note of 20th May last, I reported to you the case of the feeder to the Hullur tank in the Chitaldroog District which had become ineffective from being choked by silt and which the raiyats refused to clear. I pointed out that it was the duty of the raiyats to clear silt from all channels, other than the Cauvery and Hemavati river channels.

In your endorsement thereon, you noted that the expediency of enforcing their obligation in all cases must depend on circumstances, and that Government must decide the question in each case.

The Deputy Commissioner, Chitaldroog, now reports that the raiyats are too poor to remove the silt in the Hullur feeder, the accumulation of years, or rather he appears to support the raiyats' complaint of their inability to remove the silt on the ground of their poverty.

He recommends that Government do the work which is rather heavy, the Amildar's estimate amounting to Rs. 712.

When this has been once done at Government cost, the raiyats are to be made to do so hereafter year after year. But there is no guarantee whatever that the raiyats will do so hereafter or will be made to do so. Experience points to exactly the reverse. They have not touched their channel since it was previously repaired by the Irrigation Department. It is not likely they will touch it again when they find their previous neglect condoned, absolutely condoned as proposed by the Deputy Commissioner.

All our feeder channels over the country are absolutely neglected, and of course all other raiyats will naturally refuse to clear them when they find that the Hullur raiyats have been excused from their work. As a matter of *principle* the clearing by the raiyats ought to be insisted on; as a matter of *expediency* perhaps, Government might waive *half* the cost, in the belief that making the raiyats pay the moiety will be a lesson for the future.

Our Tank policy is in a state of transition, and principles and practice are in a measure unsettled. It would be injudicious not to be firm in this test case; to grant entire remission of the obligation is sure to be quoted against the rule in analogous cases by and bye.

C. BOWEN, *Colonel*, R. E.,
Secretary, P. W. D.

30*th September* 1890.

Dewan's Orders.

I am rather doubtful of the principle involved in this case, which is apparently one of a *feeder channel* and not an *Irrigation channel.*

In regard to Irrigation channels, it is quite clear to my mind that raiyats should remove silt except in the case of the *Cauvery and Hemavati* channels, but I am not quite sure about channels drawn off from streams for merely feeding tanks. How are they different from other feeders which are bound to silt in course of time?

Can you point to any express authority laying down the raiyats' liability to remove silt from *feeder* channels (of any kind whatsoever)? If no such express authority exists, then of course we must hold once for all that the responsibility does not rest upon the raiyats. They have quite enough to do in maintaining the bunds in good order in clearing silt from channels which irrigate their lands directly. The arguments which can be urged in support of the obligation in the case of Irrigation channels cannot apply to mere feeder channels, and there would generally be considerable hardship, if the obligation were recognized in the latter case.

K. SHESHADRI IYER,
Dewan of Mysore.

6*th January* 1891.

To

The Dewan of Mysore for orders.

HULLUR TANK FEEDER.

The point raised in your endorsement of 6th January 1891 on my proposal for clearing out the accumulations of silt from the above channel, is a very serious one, inasmuch as it involves the future maintenance by Government of all such tank feeders and the declaration of the raiyats' irresponsibility for the same. It is true I cannot point to any express authority laying down the raiyats' liability to remove silt from feeder channels. By the term I mean channels drawn off from a river or stream (there may or may not be an anikat and head works) for the purpose of filling a tank in another valley. Or these are feeders to tanks taken off from other adjoining tanks and contour feeders.

But if there is no direct and definite authority on the point, the liability is to a certain extent implied in Rule IV of Notification of 2nd October 1873. That rule lays down that earthwork "connected with the tanks *and their subsidiary works*" comes under tank maintenance, and has to be carried out by the villagers. A feeder or channel of supply to a tank is a work subsidiary to the tank, and so silt clearing from such feeders falls under the definition. So does the maintenance of the *bund* of the feeder.

An artificial feeder to a tank is as much a part of that particular tank system as is the distribution channel from its sluices to the fields. Distribution channels have to be kept clear by the raiyats, and by purity of reasoning they should keep clear a feeder bringing in water.

Further I believe that when such artificial feeders were made, it was always understood that they would be kept clear by those concerned.

Such feeders are innumerable all over the country, and I regret to say that most of them are more or less choked, or breached, or out of repair, simply from the raiyats paying no attention whatever to them. To keep them thoroughly cleared without the assistance of the raiyats would, I need hardly remark, throw an immense amount of additional work on the P. W. D. Not that I wish to relieve the Department of any legitimate burden, but the restoration of all these innumerable feeders, scattered over the country, would be a serious work, and would of course have to be followed by systematic annual clearing, and I take it that if in the case of Hullur, the raiyats are declared to be exempted from this duty, the indents for feeder repairs from all parts of the country will be more than we can deal with, and involve large expenditure, though we shall not be able fairly to reject such appeals.

I certainly believe that in some instances at least the raiyats recognize their liability themselves.

19th March 1891.

C. BOWEN, COL., R. E.,
Secretary, P. W. D.

Dewan's orders.

It is quite clear to my mind that we can never treat feeder and distribution channels in the same way.

Before passing final orders, I would like you to ascertain from Executive Engineers and Deputy Commissioners what the practice has been as regards both kinds of channels in all parts of the State. They may make such personal enquiries as they may consider necessary, and get also the opinions of the more experienced superior officials in either Department in order to be able to submit a definite report upon the question raised.

K. SHESHADRI IYER,
Dewan of Mysore.

23rd March 1891.

Circular No. 731.

GOVERNMENT OF MYSORE

MYSORE PUBLIC WORKS DEPARTMENT, CENTRAL OFFICE,
Bangalore, 4th April 1891.

To

All Deputy Commissioners and Executive Engineers,
(except Special Divisions).

A question having been raised as to the liability of raiyats to clear silt from channels other than the Cauvery and Hemavati river channels, and to maintain such channels in order, has the honor, by desire of the Dewan, to request Deputy Commissioners and Executive Engineers to be good enough to report as soon as possible, the practice that has hitherto obtained in their Districts, as regards the maintenance by raiyats of feeder and irrigation channels connected with tanks.

II. They may make such personal inquiries as they may consider necessary, and get also the opinions of the more experienced superior officers in either Department, and then submit a definite report upon the question raised.

W. McHUTCHIN,
Offg. Secretary to the Govt of Mysore, P. W. D.

DRAFT TANK CODE.

DEFINITIONS.

Tank.—A tank consists of an artificial earthen bank or "bund" thrown across sloping ground to collect the drainage from the land above it.

Sluice.—The "sluice" is a tunnel of brick or stonework, arched at top, or covered with flat stones, built through the bank to let out water to the fields below. They have usually "cisterns" at either end, to allow of the water being let in and out at different levels according to requirements. When there are no sluices, water is let out through cuts in the bund or through tunnels of wood or of rough stone in mud. These are objectionable and should be replaced by proper sluices of masonry or by cast iron pipes.

Waste-weir, "Cody" or "Calingulah."—The waste-weir is a gap left in the bund, at a lower level than the rest, for the passage of the surplus water after the tank has filled to the depth necessary for the irrigation of the area of land below it. The waste-weir is generally lined with masonry to prevent its enlargement or erosion. "Natural waste-weirs" are formed of ground beyond the ends of the bund but at a lower level than the top, over which the surplus water is allowed to run off.

Feeder.—A natural feeder is any nalla draining the high land above the tank. "An artificial feeder" to a tank is a channel cut from an adjoining valley so as to direct the drainage from the latter into the former. Such feeder may or may not be furnished with Head works, *i. e.*, Head sluice and anikats or dams to regulate the supply.

Grade stones.—These are stones fixed at intervals along a bund, at a given height above the cody, to indicate the level up to which the top of bund must be maintained.

Gauge stones.—These are slabs or stone posts fixed in the beds of tanks to indicate the depth of water.

Distribution channel.—A channel taken from the sluice to carry water to the lands below. Such a channel may or may not be provided with "aqueducts" or "dams" to carry the water across intersecting nalla or low ground, and with distribution sluices to regulate the supply to the various fields. Also with waste-weirs to relieve the discharge when overfull and prevent its breaching.

"Wud."—A low artificial bank across flat ground, to catch up the tail water or drainage from a tank above it, and redistribute it to fields further down, is so called. It is in fact a shallow tank.

Dams.—Banks of earth or masonry thrown across waste-weir nallas to carry the supply for distribution channels across or to utilize the waste water.

WORK.

Work required to tanks is classed as follows:—

(1) Restorations.
(2) Improvements.
(3) Repairs.
(4) Maintenance.

(1) "Restorations" comprise any work required to re-establish or replace in its original condition any system of irrigation which, whether from neglect or from natural causes beyond the power of the raiyats to control, has fallen into disuse, or become impaired, or less efficient than formerly. Thus, the closing of heavy breaches arising from exceptional storms, and necessitating, if not repaired, the total abandonment of the tank, the re-building of damaged waste-weirs or sluices or of broken aqueducts, the opening up of a disused and silted up feeder, clearing out accumulation of silt from a tank bed, come under the head of "restorations."

(2) "Improvements" embrace all work designed to increase the irrigating power of a tank or to strengthen it or to facilitate its working, or render it more efficient. Thus raising the waste-weir so as to store more water, lengthening it to render the tank more secure, widening or raising the bund above its original height, adding sluices so as to command more land, aqueducts to facilitate the distribution of water, would be cutting new feeders, "improvements."

(3) "Repairs" consist of all work required to make good all damages arising from ordinary "wear and tear" from time, wind, or weather. The term does not, however, apply to making good the natural wearing away or erosion of the earthen surface and turfed slopes of the bund. Such work falls under the following head of "Maintenance".

(4) "Maintenance" comprises all work required to keep the bund proper up to its full original section, *i. e.*, to keep the top at a uniform level and width from end to end as defined by the grade stones and shore stones, and to keep the turfed front and rear slopes exactly to their original formation. It also comprises clearing out silt from the sluices, feeders, and distribution channels and keeping same in efficient order, and clearing all bunds of weeds, prickly-pear and jungle when injurious. Throwing up temporary ring bunds and filling up breaches within the competence of the raiyats to make good, fall under the same head.

RESPONSIBILITIES.

The Public Works Department are responsible for all work under the first three heads, Restorations, Improvements, Repairs excepting that portion of such work as is necessitated by the failure of the raiyats concerned to maintain in past years. For major works under the first two, Government allot from the Revenues, annually, grants according to financial exigencies. For minor works under the first two, and for all "Repairs," allotments are made annually from District Funds according to assets available and requirements.

For "Repairs" of all sorts, the raiyats are formally answerable, but their liability for repairs other than "Maintenance" proper has been commuted to an Irrigation Cess. For "Maintenance" of all tanks, as defined above, the raiyats are directly and solely responsible, each raiyat in proportion to the interest he holds in the tank.

CONTRIBUTIONS.

Contributions are of two kinds, in money or in labor. Labor contribution affects "maintenance" only. It is the amount of work exacted from each raiyat to maintain his tank in proper order. It is levied periodically, at convenient intervals, when work is required to make good the earthwork or turfing.

Labor contribution in full is also exacted to meet work of restoration solely due to past neglect.

Money contributions are voluntary payments in cash made by the raiyats to meet portion of the cost of estimates ordinarily devolving on Government which without such contributions, the funds available for restorations or improvements would not be sufficient to meet. Such money contributions give the raiyats contributing a prior claim to the restoration, improvement or repair of their tank when the funds available do not admit of more than a limited number of such works being undertaken in a particular year.

There is another class of labor contribution, not appertaining to actual maintenance, which the raiyats are bound to render. It is in case of imminent danger to the bund from inundations or of a breach occurring. In such cases, the able-bodied male residents of the village are bound to turn out and join in executing such emergent work as is requisite to save the bund.

When "restorations" are undertaken by the P. W. D. and comprise earthwork and turfing which under the rules for maintenance would have in the usual course to be made good by the raiyats, as well as stonework and masonry, money contributions are also exacted to meet the cost of that portion of the earthwork which has deteriorated solely from neglect during previous years. Such contributions are, however, limited to the amount of one year's revenue of the land assessed below the tank.

DUTIES.

Executive Engineer.—It is the duty of the Executive Engineer to make himself thoroughly acquainted with the requirements of tanks in his Division and to develope their capabilities to the utmost. He should investigate and bring forward every year projects for restorations and improvements, and is the adviser of the Deputy Commissioner and L. F. Board in regard of all tank works and repairs required. The execution of all work, other than maintenance, and minor tanks (yielding revenue under Rs. 500) falls on him. For the maintenance of tanks, as

defined under "work," he is not responsible, but he should invariably bring to the notice of the Deputy Commissioner, and if necessary of the Secretary, Public Works Department, all cases of neglect that come under his observation.

Deputy Commissioner.—It is to the Deputy Commissioner that Government look for the efficient and satisfactory maintenance of all the tanks in his District. He should take systematic measures to insist on the Amildars exacting from the raiyats their full obligations in this respect, and should allow no lapse of duty on their part. He should himself in the course of his tour invariably inspect personally a certain number of tanks and satisfy himself that their up-keep is satisfactory. When this is not the case, he should take prompt measures to remedy the same. He should exact from his Assistants similar periodical inspections.

Amildars.—The Amildar is, under the Deputy Commissioner, the officer personally responsible for the condition of the tanks in his Taluk. It is for him, with the assistance of the Shekdars, to enforce on the raiyats their obligations to maintain. He should on his visit to any station invariably inspect the tanks in the immediate neighbourhood and see that the same are fully and properly maintained. For the repairs of all tanks up to a limit of Rs. 300, such repair not exceeding in labor Rs. 300, he is responsible. To meet the cost of same he is supplied with a small fixed imprest.

Shekdars.—The Shekdar is responsible for all execution work in connection with the maintenance of tanks. He apportions to the several raiyats and others concerned the quota of work to be contributed by each, and he takes steps to see that this work is done regularly and efficiently. When any person to whom work has been apportioned fails to perform the same, the Shekdar is to have the same carried out at once by hired labor, reporting the case and cost of work so done to the Amildar. For these duties he has the assistance of each village Patel and he is to see that such assistance is fully and freely rendered.

Tank Inspector.—The duty of the Tank Inspector of a Taluk is confined to the periodical inspection of all tanks within the Taluk, and to the marking thereon all work required for their full and satisfactory maintenance. He should report to the Amildar the results of each inspection, bringing to notice all things requiring attention. With actual execution of work he has nothing to do, excepting when in emergent cases his services may be required by the Amildar. The preparation of estimates for such minor repairs (under rupees 300) as are carried out by the Amildar, also falls to him, and the measurement of such work when completed.

PENALTIES.

If any person to whom work on a tank has been duly apportioned fails, on being called on, to perform the same in proper time, double the cost of the work performed by the Shekdar to make good the same, will be recovered by the Amildar from the defaulter as a revenue demand.

Any raiyat or other person wilfully injuring or endangering the security or utility of a tank will be liable to commitment before the Amildar and, on conviction, to punishment for mischief.

RULES RELATING TO PRIVATE TANKS AND WELLS.

1. Chief Commissioner's Circular No. 227, dated 31st March 1863, para 5.
2. Proclamation dated 13th July 1863, para 3.

I. In the case of a private individual constructing a new work, either tank or well, at his own expense, in a place where no such means of irrigation previously existed, the dry land rate of assessment which formerly prevailed for the lands irrigated by such work should not be disturbed, except in the case of a general revision of assessment throughout the Taluk in which the work may be situated.

Chief Commissioner's letter to Superintendent of Nagar, dated 4th April 1864.

The dry assessment on such lands shall be maintained even if garden is cultivated under the support of a well dug under this rule.

Vide Chief Commissioner's Proceedings No. 8157—1664, dated 31st January 1876.

In the case of new tanks, the submerged area should be assessed and granted to the constructor of the tank.

Chief Commissioner's Proclamation, dated 13th July 1863, para 1.

II. In the case of a private individual executing the repair or restoration of a tank or well long in desuetude, he will be allowed to hold the lands irrigated by it either—

Chief Commissioner's letter to Nundydroog Division, No. 2258—55, dated 2nd September 1865.

(*a*) at a reduction of one-fourth of the average wet assessment for the Taluk; or

(*b*) at the highest dry land rate prevailing in his own and the surrounding villages; or

(*c*) at the average wet assessment of the Taluk, the maximum rate of such assessment being reached in a series of years under the Shraya or Kaul system.

Chief Commissioner's Proclamation, dated 13th July 1863, para 2.

In the disposal of applications for repair or restoration under this rule, preference shall always be given to the raiyats of the village.

Chief Commissioner's Notification No. 366, dated 23rd December 1871, para 1.

III. The concessions above set forth (in regard to repair and construction of irrigation works undertaken before the 23rd December 1871) will as a rule be restricted to such limited periods, ordinarily not exceeding thirty years, as may be fixed at the time of authorizing each work.

Chief Commissioner's Notification No. 366, dated 23rd December 1871, para 5.

IV. The rates of assessment leviable under Rules I and II will be liable to revision at each new settlement, equally with those imposed upon ordinary Kandayam lands.

Chief Commissioner's Notification No. 366, dated 23rd December 1871, paras 2 and 4.

V. Future applications for permission to undertake works (of repair ?) under these rules will continue to receive the liberal consideration of Government, when supported by

the local revenue officers concerned, and approved by Government in the Public Works Department, but each case will (in future) require the sanction of Government, which will not be accorded except on such concurrent recommendation and approval. Full information as to the nature and estimated cost of the proposed work, and the revenue, present and prospective, of the lands that will be affected by it, will invariably be furnished with such applications.

Chief Commissioner's order No. 2148—R. 67, dated 7th June 1876.

VI. There is no limitation to additional lands, not already irrigated, being brought under wet cultivation from the water of the tank or other work of irrigation (constructed or) repaired under these rules, and the assessment on such lands will be fixed at the same reduced rate as other lands under the work, during the currency of the existing settlement.

Chief Commissioner's Proceedings No. 7905—R. 239, dated 14th November 1876.

VII. In the case of Government lands in the occupation of persons other than the (constructor or) repairer of the work, the full assessment will be collected by the Government from the occupants, and one-fourth of such collection paid to the person by whom the work was constructed or repaired. In the case of Inam lands so circumstanced, one-fourth of the water rate imposed by Government on such lands will be paid to the restorer.

Paras 3 and 4 of Chief Commissioner's Notification No. 366, dated 23rd December 1871.

VIII. The maintenance of any work sanctioned under these rules at the standard of the original plan approved by the Government will, during the term of the grant, lie with the person in whose favor such sanction is given, and any failure on his part to keep the work up to such standard will involve the immediate cancelment of the grant and the assessment of the lands at full rates, the work being thenceforth regarded and dealt with as an ordinary Government irrigation work.

Vide Dewan's Speech of October 1884.

IX. Special cases of tanks requiring an exceptionally heavy outlay for their repair or restoration and which therefore require more liberal concessions than those authorized by these rules should be reported for the orders of Government.

Chief Commissioner's Notification No. 366, dated 23rd December 1871, para 6.

X. The Government reserves to itself the power of resuming grants of tanks or wells made under the terms of these rules (since December 1871?), should such a course appear at any time to be necessary on special public grounds. In such event, the claims of the grantee will receive all due and reasonable consideration.

Chief Commissioner's Proceedings No. 7762—36, dated 3rd November 1876.

XI. A register of tanks and other works constructed or repaired under the

terms of the Proclamation of 13th July 1863, or Notification No. 366, dated 23rd December 1871, shall be maintained in the Taluk Cutcherry in the form appended.

Chief Commissioner's letter to Survey Commissioner, No. 104—9, dated 6th April 1872, para 2.

XII. At the Survey Settlement of the Taluk, a copy of such Register shall be produced before the Superintendent of Revenue Survey, who will, in every case, call for and examine the authority under which the work was undertaken, and institute a full enquiry as to the extent and cost of repairs executed and as to the previous condition of the work. If, after such enquiry, he is satisfied that the work was undertaken under competent written authority and that the terms of the grant have been duly carried out and that the work is maintained up to standard, he will submit to Government a list of such cases together with his own recommendation as to the nature of the concession to be granted, whether by reduction of one-fourth assessment or by imposition of the maximum dry crop rate of the Taluk. The Government will thereupon pass orders accordingly.

Dewan's Proceedings No. 6241—296, dated 3rd November 1881.

Chief Commissioner's letter to Survey Commissioner, No. 104—9, dated 6th April 1872, para 3.

XIII. In any case in which the Superintendent of Revenue Survey may consider that the terms of the grant have only been partially observed by the person in whose favor it has been made, he may recommend a lower amount of reduction of assessment than one-fourth.

Dewan's Speech of October 1884.

XIV. In the case of tanks and other works of irrigation which were constructed or repaired by private individuals under the terms of the Proclamation of 13th July 1863, before the issue of the Notification No. 366, dated 23rd December 1871 and which have been maintained at the original standard of efficiency, the reduction of one-fourth wet assessment will be granted as a permanent concession.

Note for the Dewan.

Now that we have put all small tanks in good order (thanks to famine), I think we must issue some clear instructions about their future maintenance.

2. I would say—

(a) All tanks yielding Rs. 200 and above will be maintained by Government.
(b) All tanks yielding less must be maintained by the raiyats, masonry works alone being done by Government.
(c) The levy of Irrigation cess on the tanks maintained by the raiyats must be suspended.
(d) If the raiyats fail to do the work, the Government must do it, and revive the Irrigation cess, raising the rate to ten per cent of the Revenue, and collecting it with arrears, provided the arrears are not charged for more than five years.
(e) The Patel must be authorized to call upon the raiyats to do their quota of work. If any one fails to do it, Irrigation cess may be charged on his land at ten per cent of his Patta assessment and collected with arrears, provided the arrears are not charged for more than five years. The cess so levied may be made over to the Patel to enable him to employ hired labor.

3. The above plan, I think, will work well, and the only doubt is whether we can lay down this rule without resorting to legislation. It seems to me that, as Irrigation cess is a customary tax and there is nothing to prevent our raising the rate, we may lay down the rule. Ten per cent Irrigation cess is quite sufficient to enable Government to do the repairs of these petty tanks.

4. Another point of doubt is, whether it will be just to raise the rate of Irrigation cess. It will be just, if we assume, as you have always assumed, that the rates of assessment of lands under these petty tanks have been purposely made low, in consideration of the usage of raiyats maintaining the tanks. If we cannot maintain this theory, the only alternative left is either to give a deduction of five or ten per-cent assessment and call upon the raiyats to maintain, or take up their maintenance into the hands of Government as in the case of all other tanks. We must do something, and I do not like to leave them alone, because we can get the assessment, whether the lands are cultivated or not. Our Revenues may not immediately suffer by neglecting these small tanks, but the produce of the country will diminish, and the raiyats will become poorer.

P. CHENTSAL ROW,
Councillor.

22nd *May* 1892.

Mysore Public Works Department.

To

The Dewan of Mysore for information.

With reference to our conversation on Saturday afternoon, 25th, "*in re*" new proposals for Tank Maintenance, you will observe from para 2 of Mr. Chentsal Row's Minute that the *maintenance* of all tanks yielding Rs 200 and above by Government is proposed. Hitherto it has been the duty of the raiyats to do earth-work and turfing to all such tanks once restored.

To go back on this will be a serious innovation. It will throw on the P. W. D., an amount of harassing work, which the staff is not equal to, and such work should fall but lightly on the raiyats, if they are only kept systematically up to the mark. I always thought it was the established "manul" of ages for them to do such repairs.

I have not yet had time to study the question again. It is a most difficult and complicated one, if another reform on present procedure is to be introduced.

I venture to suggest that the whole subject should be laid before a Committee of the Revenue Officers and Executive Engineers of the Province and thoroughly discussed by them in all its bearings. The annual Dasara Assembly at Mysore offers an admirable occasion for such a Committee. Three or four of the best Executive Engineers might be invited to Mysore on the occasion, and with the Deputy Commissioners who are likely to be also then present, they could, under the presidency of Mr. Chentsal Row, thresh out all the " pros and cons " and get at the best solution of this vexed question.

On such a Committee advantage should be taken of the presence of Colonel Grant and Mr. Ricketts in Mysore at the time, to put them on it. Their long and wide experience, combined with the practical knowledge of tank difficulties acquired by the Engineers, would add great weight to the deliberations, and enable you to arrive at the best practicable and final decision. We have been for years and years " beating about the bush" simply trying one thing, then another, and so on. Such a strong Committee, thoroughly conversant with all details, ought to be able to settle the matter once for all.

C. BOWEN, COL., R.E.,
Secretary, P. W. D.

27th June 1892.

This is a most difficult question. I don't wish to unsettle anything for the sake of theoretical perfection, which is not attainable, I am afraid, without much practical inconvenience. I would however take these papers to remain on the file on the subject.

K. SHESHADRI IYER,
Dewan.

11th December 1892.

Precis of Deputy Commissioners' replies to Chief Engineer's Cir. No. 31, dated 4th April 1891, regarding liability, &c., of raiyats to maintain irrigation and feeder channels connected with tanks.

The Deputy Commissioner, Bangalore District, in his No. 582 of 7th July 1891, reports that formerly raiyats used to clear both silt and weeds from both feeder and irrigation channels, but now it is limited to the clearing of irrigation channels only; that the duty of keeping up both the feeder and irrigation channels may be assigned to the raiyats and enforced without much trouble after they have been once restored by Government. As regards river channels, he suggests that ordinary petty works, such as the removing of weeds and shrubs, may be done by the raiyats and that the Public Works Department may undertake to clear silt, as per Government Proceedings No. 323—249 of 17th April 1885.

The Deputy Commissioner of Kolar District states in his No. 960—233 of 29th June 1891, that raiyats maintain irrigation channels, but it does not appear that the practice of clearing and maintaining feeder channels has been systematically observed or enforced.

The Deputy Commissioner of Tumkur District states in his No. 319 of 7th October 1891, that feeders and irrigation channels in question are cleared by the raiyats concerned, but in the cases of channels of great length and dimensions, the silt is removed at Government cost, the raiyats removing only the weeds; that formerly wet cultivation used to be carried on by "Batayi system" and the liability to clear silt, &c., was, it is believed, one of the conditions of the tenancy; but since the introduction of the "Nagadiyat system" and more especially since the survey settlement at which the rights and obligations of land-holders are declared, the raiyats have begun to think that they are no longer bound to do under the present system what they were doing under the old terms, and there seems to be no Rule or Regulation to enforce the work in cases of opposition.

The Deputy Commissioner, Mysore District, in his No. 481 of 28th December 1891, states that in Mysore, Yedatore, Hunsur, Heggaddevankote and Gundlupet Taluks there are no feeder channels; that the T. Narsipur Amildar reports that it is *not* the duty of the raiyats to maintain *feeder channels* and that all the Amidars state that it is the duty of the raiyats only to maintain only the minor distribution channels.

The Sub-Division Officer of French Rocks reports in his No. 593 of 16th November 1891, that raiyats pay little or no attention to the maintenance of feeder channels, since they do not consider it their duty to do so. Should they now be called on, they will, he believes, do the needful only to the irrigation channels, since they consider it is Government, and not they, who are responsible for the feeder.

The Deputy Commissioner, Hassan District, reports in his No. 142 of 4th July 1891, that weeds are cleared in irrigation channels and that silt clearing is not enforced, but done perfunctorily in Belur, Arkalgud and Channarayapatna; that feeder channels are not maintained by the raiyats. As regards the maintenance of the channels he states that the practice in fact is not uniform, but that the reason for such a variation is not understood.

The Deputy Commissioner, Shimoga District, states in his No. 315, dated 11th November 1891, that there is no definite rule to enforce the maintenance by raiyats of feeder and irrigation channels connected with tanks, and they are generally speaking entirely neglected; that such work as is done has only been done by persuation and advice and not by any effective compulsion.

The Deputy Commissioner, Kadur District, reports in his No. 913 of 28th August 1891, that the raiyats should be forced to maintain all channels and remove weeds, jungle, &c., and that larger channels should be cleared as river channels and brought under Rules for such.

The Deputy Commissioner, Chitaldroog District, reports in his No. 309—13 of 17th November 1891, that irrigation channels have all been maintained by raiyats, that the feeder channels of Dodderi, Tallak, Chikkanhalli, Nagasamudra, Amkundi and Siddapura tanks are efficiently maintained by raiyats, and that all other feeder channels have been neglected by them for years past. He recommends that raiyats be compelled to maintain all feeder channels only after they have been put into thorough order.

Precis of Executive Engineers' replies to Chief Engineer's Cir. No. 31, dated 4th April 1891, regarding maintenance by raiyats of irrigation and feeder channels of tanks.

Executive Engineer, Tumkur Division, No. 200 of 6th July 1891, states that ither Patels nor Shekdars consider it their duty to look to the repairs of tank iannels; and if a petition of breaches in their bunds is received, it is forwarded hrough the Amildar to the Executive Engineer stating that something must be done in the matter of building *permanent* works.

Irrigation is carried on all the year round under tank channels, and no period fixed for stopping the supply to attend to silt clearing and repairs.

The repairs of a trifling nature are done by the Nirganti or by the people owning land at the tail end of the channel, or not at all, and thus in many cases the cultivation *decreases* year after year until the channel stops a mile from the tank and no effort is made to retain it beyond.

Instances quoted are (1) Kadaba, (2) Kunigal, (3) Kottigere, (4) Chittanhalli, (5) Nonavinkere, (6) Mallaghatta, (7) Turuvekere and such other large tanks, where it is evident that there is large wastage of water in the upper parts of the channel, and how extensive are the areas of land lying waste a t the tail end of such channels as they originally existed.

Advocates Government taking up the annual maintenance of all river and tank channels with over Rs. 2,000 revenue under them, as it will be cheaper in the end than *improving* them at heavy outlay after every few years' neglect; the establishment required being paid for by raiyats by an extra cess to be levied.

Executive Engineer, Shimoga Division, No. 5 of 6th January 1893, states that raiyats still generally consider the maintenance of tanks and channels and feeders as being outside their legitimate functions, and only clear irrigation channels as they are obliged to do so.

Executive Engineer, Mysore Division, No. 93—22 of 9th January 1892, states that neither feeder nor irrigation channels from tanks are maintained by raiyats.

Executive Engineer, Kadur Division, No. 208 of 8th August 1891, advocates a channel establishment like the one on river channels in Ashtagram, as raiyats are not capable of properly maintaining grades, bunds, &c., cost of the establishment to be paid for by assessment from raiyats.

Executive Engineer, Bangalore Division, No. 3987—459 of 3rd November 1891, states that none of the channels have been properly maintained and most of them grossly neglected. Raiyats have hitherto acknowledged their liability to maintain the irrigation channels from tanks as regards removal of silt and weeds, but in *all cases* have neglected to do anything unless attention to such work was enforced by Revenue Officers.

Executive Engineer, Hassan Division, No. 174 of 25th July 1891, states that feeder channels of tanks in his Division are invariably found to be neglected and quite out of order. Irrigation channels from tanks are, as a rule maintained by the raiyats. In exceptional cases as at Arsikere tank and Kausika tank, high level sluice channels are neglected and out of use.

The liability of raiyats to clear silt from all minor channels, seems to be generally recognized, but it is more or less evaded according to the state of combination among raiyats of villages. It is believed that raiyats will attend to silt clearing of minor channels from tanks without a demur as soon as the liability is enforced.

Executive Engineer, Kolar Division, No. 382 of 8th July 1891, states that both feeders and irrigation channels from tanks are maintained in order by the raiyats as a rule.

Executive Engineer, Chitaldroog Division, No. 54 of 8th June 1891, states that *Feeder channels* are being maintained by the raiyats, some efficiently, several indifferently, while a few are neglected. The wet rates are *very low* and raiyats should maintain these, except Rekalgere. Irrigation channels should be maintained by raiyats excepting in such cases as the Bhimasamudra tank, where a conservancy establishment is necessary.